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(54) Title: COMPOSITIONS AND METHODS FOR THE THERAPY AND DIAGNOSIS OF COLON CANCER

(57) Abstract: Compositions and methods for the therapy and diagnosis of cancer, particularly colon cancer, are disclosed. Illustrative compositions comprise one or more colon tumor polypeptides, immunogenic portions thereof, polynucleotides that encode such polypeptides, antigen presenting cell that expresses such polypeptides, and T cells that are specific for cells expressing such polypeptides. The disclosed compositions are useful, for example, in the diagnosis, prevention and/or treatment of diseases, particularly colon cancer.

# COMPOSITIONS AND METHODS FOR THE THERAPY AND DIAGNOSIS OF COLON CANCER

## TECHNICAL FIELD OF THE INVENTION

The present invention relates generally to therapy and diagnosis of cancer, such as colon cancer. The invention is more specifically related to polypeptides, comprising at least a portion of a colon tumor protein, and to polynucleotides encoding such polypeptides. Such polypeptides and polynucleotides are useful in pharmaceutical compositions, *e.g.*, vaccines, and other compositions for the diagnosis and treatment of colon cancer.

## BACKGROUND OF THE INVENTION

Cancer is a significant health problem throughout the world. Although advances have been made in detection and therapy of cancer, no vaccine or other universally successful method for prevention and/or treatment is currently available. Current therapies, which are generally based on a combination of chemotherapy or surgery and radiation, continue to prove inadequate in many patients.

Colon cancer is the second most frequently diagnosed malignancy in the United States as well as the second most common cause of cancer death. The five-year survival rate for patients with colorectal cancer detected in an early localized stage is 92%; unfortunately, only 37% of colorectal cancer is diagnosed at this stage. The survival rate drops to 64% if the cancer is allowed to spread to adjacent organs or lymph nodes, and to 7% in patients with distant metastases.

The prognosis of colon cancer is directly related to the degree of penetration of the tumor through the bowel wall and the presence or absence of nodal involvement, consequently, early detection and treatment are especially important. Currently, diagnosis is aided by the use of screening assays for fecal occult blood, sigmoidoscopy, colonoscopy and double contrast barium enemas. Treatment regimens are determined by the type and stage of the cancer, and include surgery, radiation therapy and/or chemotherapy. Recurrence following surgery (the most common form of therapy) is a major problem and is often the ultimate cause of death. In spite of

considerable research into therapies for the disease, colon cancer remains difficult to diagnose and treat. In spite of considerable research into therapies for these and other cancers, colon cancer remains difficult to diagnose and treat effectively. Accordingly, there is a need in the art for improved methods for detecting and treating such cancers. The present invention fulfills these needs and further provides other related advantages.

In spite of considerable research into therapies for these and other cancers, colon cancer remains difficult to diagnose and treat effectively. Accordingly, there is a need in the art for improved methods for detecting and treating such cancers. The present invention fulfills these needs and further provides other related advantages.

SUMMARY OF THE INVENTION

In one aspect, the present invention provides polynucleotide compositions comprising a sequence selected from the group consisting of:

(a) sequences provided in SEQ ID NO:1-934;

(b) complements of the sequences provided in SEQ ID NO:1-934;

(c) sequences consisting of at least 20, 25, 30, 35, 40, 45, 50, 75 and 100 contiguous residues of a sequence provided in SEQ ID NO:1-934;

(d) sequences that hybridize to a sequence provided in SEQ ID NO:1-934, under moderate or highly stringent conditions;

(e) sequences having at least 75%, 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identity to a sequence of SEQ ID NO:1-934;

(f) degenerate variants of a sequence provided in SEQ ID NO:1-934.

In one preferred embodiment, the polynucleotide compositions of the invention are expressed in at least about 20%, more preferably in at least about 30%, and most preferably in at least about 50% of colon tumor samples tested, at a level that is at least about 2-fold, preferably at least about 5-fold, and most preferably at least about 10-fold higher than that for normal tissues.

The present invention, in another aspect, provides polypeptide compositions comprising an amino acid sequence that is encoded by a polynucleotide sequence described above.

In certain preferred embodiments, the polypeptides and/or polynucleotides of the present invention are immunogenic, *i.e.*, they are capable of eliciting an immune response, particularly a humoral and/or cellular immune response, as further described herein.

The present invention further provides fragments, variants and/or derivatives of the disclosed polypeptide and/or polynucleotide sequences, wherein the fragments, variants and/or derivatives preferably have a level of immunogenic activity of at least about 50%, preferably at least about 70% and more preferably at least about 90% of the level of immunogenic activity of a polypeptide sequence encoded by a polynucleotide sequence set forth in SEQ ID NO:1-934.

The present invention further provides polynucleotides that encode a polypeptide described above, expression vectors comprising such polynucleotides and host cells transformed or transfected with such expression vectors.

Within other aspects, the present invention provides pharmaceutical compositions comprising a polypeptide or polynucleotide as described above and a physiologically acceptable carrier.

Within a related aspect of the present invention, the pharmaceutical compositions, *e.g.*, vaccine compositions, are provided for prophylactic or therapeutic applications. Such compositions generally comprise an immunogenic polypeptide or polynucleotide of the invention and an immunostimulant, such as an adjuvant.

The present invention further provides pharmaceutical compositions that comprise: (a) an antibody or antigen-binding fragment thereof that specifically binds to a polypeptide of the present invention, or a fragment thereof; and (b) a physiologically acceptable carrier.

Within further aspects, the present invention provides pharmaceutical compositions comprising: (a) an antigen presenting cell that expresses a polypeptide as described above and (b) a pharmaceutically acceptable carrier or excipient. Illustrative antigen presenting cells include dendritic cells, macrophages, monocytes, fibroblasts and B cells.

Within related aspects, pharmaceutical compositions are provided that comprise: (a) an antigen presenting cell that expresses a polypeptide as described above and (b) an immunostimulant.

The present invention further provides, in other aspects, fusion proteins that comprise at least one polypeptide as described above, as well as polynucleotides encoding such fusion proteins, typically in the form of pharmaceutical compositions, *e.g.*, vaccine compositions, comprising a physiologically acceptable carrier and/or an immunostimulant. The fusions proteins may comprise multiple immunogenic polypeptides or portions/variants thereof, as described herein, and may further comprise one or more polypeptide segments for facilitating the expression, purification and/or immunogenicity of the polypeptide(s).

Within further aspects, the present invention provides methods for stimulating an immune response in a patient, preferably a T cell response in a human patient, comprising administering a pharmaceutical composition described herein. The patient may be afflicted with colon cancer, in which case the methods provide treatment for the disease, or patient considered at risk for such a disease may be treated prophylactically.

Within further aspects, the present invention provides methods for inhibiting the development of a cancer in a patient, comprising administering to a patient a pharmaceutical composition as recited above. The patient may be afflicted with colon cancer, in which case the methods provide treatment for the disease, or patient considered at risk for such a disease may be treated prophylactically.

The present invention further provides, within other aspects, methods for removing tumor cells from a biological sample, comprising contacting a biological sample with T cells that specifically react with a polypeptide of the present invention, wherein the step of contacting is performed under conditions and for a time sufficient to permit the removal of cells expressing the protein from the sample.

Within related aspects, methods are provided for inhibiting the development of a cancer in a patient, comprising administering to a patient a biological sample treated as described above.

Methods are further provided, within other aspects, for stimulating and/or expanding T cells specific for a polypeptide of the present invention, comprising contacting T cells with one or more of: (i) a polypeptide as described above; (ii) a polynucleotide encoding such a polypeptide; and/or (iii) an antigen presenting cell that expresses such a polypeptide; under conditions and for a time sufficient to permit the stimulation and/or expansion of T cells. Isolated T cell populations comprising T cells prepared as described above are also provided.

Within further aspects, the present invention provides methods for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of a T cell population as described above.

The present invention further provides methods for inhibiting the development of a cancer in a patient, comprising the steps of: (a) incubating $CD4^+$ and/or $CD8^+$ T cells isolated from a patient with one or more of: (i) a polypeptide comprising at least an immunogenic portion of polypeptide disclosed herein; (ii) a polynucleotide encoding such a polypeptide; and (iii) an antigen-presenting cell that expressed such a polypeptide; and (b) administering to the patient an effective amount of the proliferated T cells, and thereby inhibiting the development of a cancer in the patient. Proliferated cells may, but need not, be cloned prior to administration to the patient.

Within further aspects, the present invention provides methods for determining the presence or absence of a cancer, preferably a colon cancer, in a patient comprising: (a) contacting a biological sample obtained from a patient with a binding agent that binds to a polypeptide as recited above; (b) detecting in the sample an amount of polypeptide that binds to the binding agent; and (c) comparing the amount of polypeptide with a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient. Within preferred embodiments, the binding agent is an antibody, more preferably a monoclonal antibody.

The present invention also provides, within other aspects, methods for monitoring the progression of a cancer in a patient. Such methods comprise the steps of: (a) contacting a biological sample obtained from a patient at a first point in time with a binding agent that binds to a polypeptide as recited above; (b) detecting in the

sample an amount of polypeptide that binds to the binding agent; (c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in time; and (d) comparing the amount of polypeptide detected in step (c) with the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

The present invention further provides, within other aspects, methods for determining the presence or absence of a cancer in a patient, comprising the steps of: (a) contacting a biological sample, e.g., tumor sample, serum sample, etc., obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes a polypeptide of the present invention; (b) detecting in the sample a level of a polynucleotide, preferably mRNA, that hybridizes to the oligonucleotide; and (c) comparing the level of polynucleotide that hybridizes to the oligonucleotide with a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient. Within certain embodiments, the amount of mRNA is detected via polymerase chain reaction using, for example, at least one oligonucleotide primer that hybridizes to a polynucleotide encoding a polypeptide as recited above, or a complement of such a polynucleotide. Within other embodiments, the amount of mRNA is detected using a hybridization technique, employing an oligonucleotide probe that hybridizes to a polynucleotide that encodes a polypeptide as recited above, or a complement of such a polynucleotide.

In related aspects, methods are provided for monitoring the progression of a cancer in a patient, comprising the steps of: (a) contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes a polypeptide of the present invention; (b) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide; (c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in time; and (d) comparing the amount of polynucleotide detected in step (c) with the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

Within further aspects, the present invention provides antibodies, such as monoclonal antibodies, that bind to a polypeptide as described above, as well as

diagnostic kits comprising such antibodies. Diagnostic kits comprising one or more oligonucleotide probes or primers as described above are also provided.

These and other aspects of the present invention will become apparent upon reference to the following detailed description. All references disclosed herein are hereby incorporated by reference in their entirety as if each was incorporated individually.

BRIEF DESCRIPTION OF THE SEQUENCE IDENTIFIERS

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| SEQ ID NO:906 | is the determined cDNA sequence of clone | 76856.1 |
| SEQ ID NO:907 | is the determined cDNA sequence of clone | 76857.2 |
| SEQ ID NO:908 | is the determined cDNA sequence of clone | 76858.1 |
| SEQ ID NO:909 | is the determined cDNA sequence of clone | 76859.1 |
| SEQ ID NO:910 | is the determined cDNA sequence of clone | 76860.1 |
| SEQ ID NO:911 | is the determined cDNA sequence of clone | 76861.1 |
| SEQ ID NO:912 | is the determined cDNA sequence of clone | 76862.1 |
| SEQ ID NO:913 | is the determined cDNA sequence of clone | 76863.2 |
| SEQ ID NO:914 | is the determined cDNA sequence of clone | 76864.2 |
| SEQ ID NO:915 | is the determined cDNA sequence of clone | 76865.1 |
| SEQ ID NO:916 | is the determined cDNA sequence of clone | 76866.1 |
| SEQ ID NO:917 | is the determined cDNA sequence of clone | 76869.1 |
| SEQ ID NO:918 | is the determined cDNA sequence of clone | 76870.1 |
| SEQ ID NO:919 | is the determined cDNA sequence of clone | 76871.1 |
| SEQ ID NO:920 | is the determined cDNA sequence of clone | 76872.1 |
| SEQ ID NO:921 | is the determined cDNA sequence of clone | 76873.1 |
| SEQ ID NO:922 | is the determined cDNA sequence of clone | 76874.2 |
| SEQ ID NO:923 | is the determined cDNA sequence of clone | 76875.1 |
| SEQ ID NO:924 | is the determined cDNA sequence of clone | 76876.1 |
| SEQ ID NO:925 | is the determined cDNA sequence of clone | 76878.1 |
| SEQ ID NO:926 | is the determined cDNA sequence of clone | 76879.1 |

| | | |
|---|---|---|
| SEQ ID NO:927 | is the determined cDNA sequence of clone | 76880.1 |
| SEQ ID NO:928 | is the determined cDNA sequence of clone | 76881.1 |
| SEQ ID NO:929 | is the determined cDNA sequence of clone | 76882.1 |
| SEQ ID NO:930 | is the determined cDNA sequence of clone | 76883.2 |
| SEQ ID NO:931 | is the determined cDNA sequence of clone | 76884.2 |
| SEQ ID NO:932 | is the determined cDNA sequence of clone | 76886.1 |
| SEQ ID NO:933 | is the determined cDNA sequence of clone | 76887.1 |
| SEQ ID NO:934 | is the determined cDNA sequence of clone | 76889.2 |

## DETAILED DESCRIPTION OF THE INVENTION

The present invention is directed generally to compositions and their use in the therapy and diagnosis of cancer, particularly colon cancer. As described further below, illustrative compositions of the present invention include, but are not restricted to, polypeptides, particularly immunogenic polypeptides, polynucleotides encoding such polypeptides, antibodies and other binding agents, antigen presenting cells (APCs) and immune system cells (*e.g.*, T cells).

The practice of the present invention will employ, unless indicated specifically to the contrary, conventional methods of virology, immunology, microbiology, molecular biology and recombinant DNA techniques within the skill of the art, many of which are described below for the purpose of illustration. Such techniques are explained fully in the literature. See, *e.g.*, Sambrook, et al. Molecular Cloning: A Laboratory Manual (2nd Edition, 1989); Maniatis et al. Molecular Cloning: A Laboratory Manual (1982); DNA Cloning: A Practical Approach, vol. I & II (D. Glover, ed.); Oligonucleotide Synthesis (N. Gait, ed., 1984); Nucleic Acid Hybridization (B. Hames & S. Higgins, eds., 1985); Transcription and Translation (B. Hames & S. Higgins, eds., 1984); Animal Cell Culture (R. Freshney, ed., 1986); Perbal, A Practical Guide to Molecular Cloning (1984).

All publications, patents and patent applications cited herein, whether supra or infra, are hereby incorporated by reference in their entirety.

As used in this specification and the appended claims, the singular forms "a," "an" and "the" include plural references unless the content clearly dictates otherwise.

Polypeptide Compositions

As used herein, the term "polypeptide" " is used in its conventional meaning, *i.e.*, as a sequence of amino acids. The polypeptides are not limited to a specific length of the product; thus, peptides, oligopeptides, and proteins are included within the definition of polypeptide, and such terms may be used interchangeably herein unless specifically indicated otherwise. This term also does not refer to or exclude post-expression modifications of the polypeptide, for example, glycosylations, acetylations, phosphorylations and the like, as well as other modifications known in the art, both naturally occurring and non-naturally occurring. A polypeptide may be an entire protein, or a subsequence thereof. Particular polypeptides of interest in the context of this invention are amino acid subsequences comprising epitopes, *i.e.*, antigenic determinants substantially responsible for the immunogenic properties of a polypeptide and being capable of evoking an immune response.

Particularly illustrative polypeptides of the present invention comprise those encoded by a polynucleotide sequence set forth in any one of SEQ ID NO:1-934, or a sequence that hybridizes under moderately stringent conditions, or, alternatively, under highly stringent conditions, to a polynucleotide sequence set forth in any one of SEQ ID NO:1-934.

The polypeptides of the present invention are sometimes herein referred to as colon tumor proteins or colon tumor polypeptides, as an indication that their identification has been based at least in part upon their increased levels of expression in colon tumor samples. Thus, a "colon tumor polypeptide" or "colon tumor protein," refers generally to a polypeptide sequence of the present invention, or a polynucleotide sequence encoding such a polypeptide, that is expressed in a substantial proportion of colon tumor samples, for example preferably greater than about 20%, more preferably greater than about 30%, and most preferably greater than about 50% or more of colon tumor samples tested, at a level that is at least two fold, and preferably at least five fold,

greater than the level of expression in normal tissues, as determined using a representative assay provided herein. A colon tumor polypeptide sequence of the invention, based upon its increased level of expression in tumor cells, has particular utility both as a diagnostic marker as well as a therapeutic target, as further described below.

In certain preferred embodiments, the polypeptides of the invention are immunogenic, *i.e.*, they react detectably within an immunoassay (such as an ELISA or T-cell stimulation assay) with antisera and/or T-cells from a patient with colon cancer. Screening for immunogenic activity can be performed using techniques well known to the skilled artisan. For example, such screens can be performed using methods such as those described in Harlow and Lane, *Antibodies: A Laboratory Manual,* Cold Spring Harbor Laboratory, 1988. In one illustrative example, a polypeptide may be immobilized on a solid support and contacted with patient sera to allow binding of antibodies within the sera to the immobilized polypeptide. Unbound sera may then be removed and bound antibodies detected using, for example, $^{125}$I-labeled Protein A.

As would be recognized by the skilled artisan, immunogenic portions of the polypeptides disclosed herein are also encompassed by the present invention. An "immunogenic portion," as used herein, is a fragment of an immunogenic polypeptide of the invention that itself is immunologically reactive (*i.e.*, specifically binds) with the B-cells and/or T-cell surface antigen receptors that recognize the polypeptide. Immunogenic portions may generally be identified using well known techniques, such as those summarized in Paul, *Fundamental Immunology*, 3rd ed., 243-247 (Raven Press, 1993) and references cited therein. Such techniques include screening polypeptides for the ability to react with antigen-specific antibodies, antisera and/or T-cell lines or clones. As used herein, antisera and antibodies are "antigen-specific" if they specifically bind to an antigen (*i.e.*, they react with the protein in an ELISA or other immunoassay, and do not react detectably with unrelated proteins). Such antisera and antibodies may be prepared as described herein, and using well-known techniques.

In one preferred embodiment, an immunogenic portion of a polypeptide of the present invention is a portion that reacts with antisera and/or T-cells at a level that is not substantially less than the reactivity of the full-length polypeptide (*e.g.*, in an

ELISA and/or T-cell reactivity assay). Preferably, the level of immunogenic activity of the immunogenic portion is at least about 50%, preferably at least about 70% and most preferably greater than about 90% of the immunogenicity for the full-length polypeptide. In some instances, preferred immunogenic portions will be identified that have a level of immunogenic activity greater than that of the corresponding full-length polypeptide, *e.g.*, having greater than about 100% or 150% or more immunogenic activity.

In certain other embodiments, illustrative immunogenic portions may include peptides in which an N-terminal leader sequence and/or transmembrane domain have been deleted. Other illustrative immunogenic portions will contain a small N- and/or C-terminal deletion (*e.g.*, 1-30 amino acids, preferably 5-15 amino acids), relative to the mature protein.

In another embodiment, a polypeptide composition of the invention may also comprise one or more polypeptides that are immunologically reactive with T cells and/or antibodies generated against a polypeptide of the invention, particularly a polypeptide having an amino acid sequence disclosed herein, or to an immunogenic fragment or variant thereof.

In another embodiment of the invention, polypeptides are provided that comprise one or more polypeptides that are capable of eliciting T cells and/or antibodies that are immunologically reactive with one or more polypeptides described herein, or one or more polypeptides encoded by contiguous nucleic acid sequences contained in the polynucleotide sequences disclosed herein, or immunogenic fragments or variants thereof, or to one or more nucleic acid sequences which hybridize to one or more of these sequences under conditions of moderate to high stringency.

The present invention, in another aspect, provides polypeptide fragments comprising at least about 5, 10, 15, 20, 25, 50, or 100 contiguous amino acids, or more, including all intermediate lengths, of a polypeptide compositions set forth herein, such as those encoded by a polynucleotide sequence set forth in a sequence of SEQ ID NO:1-934.

In another aspect, the present invention provides variants of the polypeptide compositions described herein. Polypeptide variants generally

encompassed by the present invention will typically exhibit at least about 70%, 75%, 80%, 85%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, or 99% or more identity (determined as described below), along its length, to a polypeptide sequences set forth herein.

In one preferred embodiment, the polypeptide fragments and variants provided by the present invention are immunologically reactive with an antibody and/or T-cell that reacts with a full-length polypeptide specifically set forth herein.

In another preferred embodiment, the polypeptide fragments and variants provided by the present invention exhibit a level of immunogenic activity of at least about 50%, preferably at least about 70%, and most preferably at least about 90% or more of that exhibited by a full-length polypeptide sequence specifically set forth herein.

A polypeptide "variant," as the term is used herein, is a polypeptide that typically differs from a polypeptide specifically disclosed herein in one or more substitutions, deletions, additions and/or insertions. Such variants may be naturally occurring or may be synthetically generated, for example, by modifying one or more of the above polypeptide sequences of the invention and evaluating their immunogenic activity as described herein and/or using any of a number of techniques well known in the art.

For example, certain illustrative variants of the polypeptides of the invention include those in which one or more portions, such as an N-terminal leader sequence or transmembrane domain, have been removed. Other illustrative variants include variants in which a small portion (*e.g.*, 1-30 amino acids, preferably 5-15 amino acids) has been removed from the N- and/or C-terminal of the mature protein.

In many instances, a variant will contain conservative substitutions. A "conservative substitution" is one in which an amino acid is substituted for another amino acid that has similar properties, such that one skilled in the art of peptide chemistry would expect the secondary structure and hydropathic nature of the polypeptide to be substantially unchanged. As described above, modifications may be made in the structure of the polynucleotides and polypeptides of the present invention and still obtain a functional molecule that encodes a variant or derivative polypeptide

with desirable characteristics, *e.g.*, with immunogenic characteristics. When it is desired to alter the amino acid sequence of a polypeptide to create an equivalent, or even an improved, immunogenic variant or portion of a polypeptide of the invention, one skilled in the art will typically change one or more of the codons of the encoding DNA sequence according to Table 1.

For example, certain amino acids may be substituted for other amino acids in a protein structure without appreciable loss of interactive binding capacity with structures such as, for example, antigen-binding regions of antibodies or binding sites on substrate molecules. Since it is the interactive capacity and nature of a protein that defines that protein's biological functional activity, certain amino acid sequence substitutions can be made in a protein sequence, and, of course, its underlying DNA coding sequence, and nevertheless obtain a protein with like properties. It is thus contemplated that various changes may be made in the peptide sequences of the disclosed compositions, or corresponding DNA sequences which encode said peptides without appreciable loss of their biological utility or activity.

**TABLE 1**

| Amino Acids | | | Codons | | | | | |
|---|---|---|---|---|---|---|---|---|
| Alanine | Ala | A | GCA | GCC | GCG | GCU | | |
| Cysteine | Cys | C | UGC | UGU | | | | |
| Aspartic acid | Asp | D | GAC | GAU | | | | |
| Glutamic acid | Glu | E | GAA | GAG | | | | |
| Phenylalanine | Phe | F | UUC | UUU | | | | |
| Glycine | Gly | G | GGA | GGC | GGG | GGU | | |
| Histidine | His | H | CAC | CAU | | | | |
| Isoleucine | Ile | I | AUA | AUC | AUU | | | |
| Lysine | Lys | K | AAA | AAG | | | | |
| Leucine | Leu | L | UUA | UUG | CUA | CUC | CUG | CUU |
| Methionine | Met | M | AUG | | | | | |
| Asparagine | Asn | N | AAC | AAU | | | | |
| Proline | Pro | P | CCA | CCC | CCG | CCU | | |
| Glutamine | Gln | Q | CAA | CAG | | | | |
| Arginine | Arg | R | AGA | AGG | CGA | CGC | CGG | CGU |
| Serine | Ser | S | AGC | AGU | UCA | UCC | UCG | UCU |
| Threonine | Thr | T | ACA | ACC | ACG | ACU | | |
| Valine | Val | V | GUA | GUC | GUG | GUU | | |
| Tryptophan | Trp | W | UGG | | | | | |
| Tyrosine | Tyr | Y | UAC | UAU | | | | |

In making such changes, the hydropathic index of amino acids may be considered. The importance of the hydropathic amino acid index in conferring interactive biologic function on a protein is generally understood in the art (Kyte and Doolittle, 1982, incorporated herein by reference). It is accepted that the relative hydropathic character of the amino acid contributes to the secondary structure of the resultant protein, which in turn defines the interaction of the protein with other molecules, for example, enzymes, substrates, receptors, DNA, antibodies, antigens, and the like. Each amino acid has been assigned a hydropathic index on the basis of its hydrophobicity and charge characteristics (Kyte and Doolittle, 1982). These values are:

isoleucine (+4.5); valine (+4.2); leucine (+3.8); phenylalanine (+2.8); cysteine/cystine (+2.5); methionine (+1.9); alanine (+1.8); glycine (–0.4); threonine (–0.7); serine (–0.8); tryptophan (–0.9); tyrosine (–1.3); proline (–1.6); histidine (–3.2); glutamate (–3.5); glutamine (–3.5); aspartate (–3.5); asparagine (–3.5); lysine (–3.9); and arginine (–4.5).

It is known in the art that certain amino acids may be substituted by other amino acids having a similar hydropathic index or score and still result in a protein with similar biological activity, *i.e.* still obtain a biological functionally equivalent protein. In making such changes, the substitution of amino acids whose hydropathic indices are within ±2 is preferred, those within ±1 are particularly preferred, and those within ±0.5 are even more particularly preferred. It is also understood in the art that the substitution of like amino acids can be made effectively on the basis of hydrophilicity. U. S. Patent 4,554,101 (specifically incorporated herein by reference in its entirety), states that the greatest local average hydrophilicity of a protein, as governed by the hydrophilicity of its adjacent amino acids, correlates with a biological property of the protein.

As detailed in U. S. Patent 4,554,101, the following hydrophilicity values have been assigned to amino acid residues: arginine (+3.0); lysine (+3.0); aspartate (+3.0 ± 1); glutamate (+3.0 ± 1); serine (+0.3); asparagine (+0.2); glutamine (+0.2); glycine (0); threonine (–0.4); proline (–0.5 ± 1); alanine (–0.5); histidine (–0.5); cysteine (–1.0); methionine (–1.3); valine (–1.5); leucine (–1.8); isoleucine (–1.8); tyrosine (–2.3); phenylalanine (–2.5); tryptophan (–3.4). It is understood that an amino acid can be substituted for another having a similar hydrophilicity value and still obtain a biologically equivalent, and in particular, an immunologically equivalent protein. In such changes, the substitution of amino acids whose hydrophilicity values are within ±2 is preferred, those within ±1 are particularly preferred, and those within ±0.5 are even more particularly preferred.

As outlined above, amino acid substitutions are generally therefore based on the relative similarity of the amino acid side-chain substituents, for example, their hydrophobicity, hydrophilicity, charge, size, and the like. Exemplary substitutions that take various of the foregoing characteristics into consideration are well known to those of skill in the art and include: arginine and lysine; glutamate and aspartate; serine and threonine; glutamine and asparagine; and valine, leucine and isoleucine.

In addition, any polynucleotide may be further modified to increase stability *in vivo*. Possible modifications include, but are not limited to, the addition of flanking sequences at the 5' and/or 3' ends; the use of phosphorothioate or 2' O-methyl rather than phosphodiesterase linkages in the backbone; and/or the inclusion of nontraditional bases such as inosine, queosine and wybutosine, as well as acetyl-methyl-, thio- and other modified forms of adenine, cytidine, guanine, thymine and uridine.

Amino acid substitutions may further be made on the basis of similarity in polarity, charge, solubility, hydrophobicity, hydrophilicity and/or the amphipathic nature of the residues. For example, negatively charged amino acids include aspartic acid and glutamic acid; positively charged amino acids include lysine and arginine; and amino acids with uncharged polar head groups having similar hydrophilicity values include leucine, isoleucine and valine; glycine and alanine; asparagine and glutamine; and serine, threonine, phenylalanine and tyrosine. Other groups of amino acids that may represent conservative changes include: (1) ala, pro, gly, glu, asp, gln, asn, ser, thr; (2) cys, ser, tyr, thr; (3) val, ile, leu, met, ala, phe; (4) lys, arg, his; and (5) phe, tyr, trp, his. A variant may also, or alternatively, contain nonconservative changes. In a preferred embodiment, variant polypeptides differ from a native sequence by substitution, deletion or addition of five amino acids or fewer. Variants may also (or alternatively) be modified by, for example, the deletion or addition of amino acids that have minimal influence on the immunogenicity, secondary structure and hydropathic nature of the polypeptide.

As noted above, polypeptides may comprise a signal (or leader) sequence at the N-terminal end of the protein, which co-translationally or post-translationally directs transfer of the protein. The polypeptide may also be conjugated to a linker or other sequence for ease of synthesis, purification or identification of the polypeptide (*e.g.*, poly-His), or to enhance binding of the polypeptide to a solid support. For example, a polypeptide may be conjugated to an immunoglobulin Fc region.

When comparing polypeptide sequences, two sequences are said to be "identical" if the sequence of amino acids in the two sequences is the same when aligned for maximum correspondence, as described below. Comparisons between two

sequences are typically performed by comparing the sequences over a comparison window to identify and compare local regions of sequence similarity. A "comparison window" as used herein, refers to a segment of at least about 20 contiguous positions, usually 30 to about 75, 40 to about 50, in which a sequence may be compared to a reference sequence of the same number of contiguous positions after the two sequences are optimally aligned.

Optimal alignment of sequences for comparison may be conducted using the Megalign program in the Lasergene suite of bioinformatics software (DNASTAR, Inc., Madison, WI), using default parameters. This program embodies several alignment schemes described in the following references: Dayhoff, M.O. (1978) A model of evolutionary change in proteins – Matrices for detecting distant relationships. In Dayhoff, M.O. (ed.) Atlas of Protein Sequence and Structure, National Biomedical Research Foundation, Washington DC Vol. 5, Suppl. 3, pp. 345-358; Hein J. (1990) Unified Approach to Alignment and Phylogenes pp. 626-645 *Methods in Enzymology* vol. 183, Academic Press, Inc., San Diego, CA; Higgins, D.G. and Sharp, P.M. (1989) *CABIOS 5*:151-153; Myers, E.W. and Muller W. (1988) *CABIOS 4*:11-17; Robinson, E.D. (1971) *Comb. Theor 11*:105; Saitou, N. Nei, M. (1987) *Mol. Biol. Evol. 4*:406-425; Sneath, P.H.A. and Sokal, R.R. (1973) *Numerical Taxonomy – the Principles and Practice of Numerical Taxonomy*, Freeman Press, San Francisco, CA; Wilbur, W.J. and Lipman, D.J. (1983) *Proc. Natl. Acad., Sci. USA 80*:726-730.

Alternatively, optimal alignment of sequences for comparison may be conducted by the local identity algorithm of Smith and Waterman (1981) *Add. APL. Math* 2:482, by the identity alignment algorithm of Needleman and Wunsch (1970) *J. Mol. Biol.* 48:443, by the search for similarity methods of Pearson and Lipman (1988) *Proc. Natl. Acad. Sci. USA* 85: 2444, by computerized implementations of these algorithms (GAP, BESTFIT, BLAST, FASTA, and TFASTA in the Wisconsin Genetics Software Package, Genetics Computer Group (GCG), 575 Science Dr., Madison, WI), or by inspection.

One preferred example of algorithms that are suitable for determining percent sequence identity and sequence similarity are the BLAST and BLAST 2.0 algorithms, which are described in Altschul et al. (1977) *Nucl. Acids Res.* 25:3389-3402

and Altschul et al. (1990) *J. Mol. Biol.* 215:403-410, respectively. BLAST and BLAST 2.0 can be used, for example with the parameters described herein, to determine percent sequence identity for the polynucleotides and polypeptides of the invention. Software for performing BLAST analyses is publicly available through the National Center for Biotechnology Information. For amino acid sequences, a scoring matrix can be used to calculate the cumulative score. Extension of the word hits in each direction are halted when: the cumulative alignment score falls off by the quantity X from its maximum achieved value; the cumulative score goes to zero or below, due to the accumulation of one or more negative-scoring residue alignments; or the end of either sequence is reached. The BLAST algorithm parameters W, T and X determine the sensitivity and speed of the alignment.

In one preferred approach, the "percentage of sequence identity" is determined by comparing two optimally aligned sequences over a window of comparison of at least 20 positions, wherein the portion of the polypeptide sequence in the comparison window may comprise additions or deletions (*i.e.*, gaps) of 20 percent or less, usually 5 to 15 percent, or 10 to 12 percent, as compared to the reference sequences (which does not comprise additions or deletions) for optimal alignment of the two sequences. The percentage is calculated by determining the number of positions at which the identical amino acid residue occurs in both sequences to yield the number of matched positions, dividing the number of matched positions by the total number of positions in the reference sequence (*i.e.*, the window size) and multiplying the results by 100 to yield the percentage of sequence identity.

Within other illustrative embodiments, a polypeptide may be a xenogeneic polypeptide that comprises an polypeptide having substantial sequence identity, as described above, to the human polypeptide (also termed autologous antigen) which served as a reference polypeptide, but which xenogeneic polypeptide is derived from a different, non-human species. One skilled in the art will recognize that "self"antigens are often poor stimulators of CD8+ and CD4+ T-lymphocyte responses, and therefore efficient immunotherapeutic strategies directed against tumor polypeptides require the development of methods to overcome immune tolerance to particular self tumor polypeptides. For example, humans immunized with prostase

protein from a xenogeneic (non human) origin are capable of mounting an immune response against the counterpart human protein, *e.g.* the human prostase tumor protein present on human tumor cells. Accordingly, the present invention provides methods for purifying the xenogeneic form of the tumor proteins set forth herein, such as the polypeptides encoded by polynucleotide sequences set forth in SEQ ID NO:1-934.

Therefore, one aspect of the present invention provides xenogeneic variants of the polypeptide compositions described herein. Such xenogeneic variants generally encompassed by the present invention will typically exhibit at least about 70%, 75%, 80%, 85%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, or 99% or more identity along their lengths, to a polypeptide sequences set forth herein.

More particularly, the invention is directed to mouse, rat, monkey, porcine and other non-human polypeptides which can be used as xenogeneic forms of human polypeptides set forth herein, to induce immune responses directed against tumor polypeptides of the invention.

Within other illustrative embodiments, a polypeptide may be a fusion polypeptide that comprises multiple polypeptides as described herein, or that comprises at least one polypeptide as described herein and an unrelated sequence, such as a known tumor protein. A fusion partner may, for example, assist in providing T helper epitopes (an immunological fusion partner), preferably T helper epitopes recognized by humans, or may assist in expressing the protein (an expression enhancer) at higher yields than the native recombinant protein. Certain preferred fusion partners are both immunological and expression enhancing fusion partners. Other fusion partners may be selected so as to increase the solubility of the polypeptide or to enable the polypeptide to be targeted to desired intracellular compartments. Still further fusion partners include affinity tags, which facilitate purification of the polypeptide.

Fusion polypeptides may generally be prepared using standard techniques, including chemical conjugation. Preferably, a fusion polypeptide is expressed as a recombinant polypeptide, allowing the production of increased levels, relative to a non-fused polypeptide, in an expression system. Briefly, DNA sequences encoding the polypeptide components may be assembled separately, and ligated into an appropriate expression vector. The 3' end of the DNA sequence encoding one

polypeptide component is ligated, with or without a peptide linker, to the 5' end of a DNA sequence encoding the second polypeptide component so that the reading frames of the sequences are in phase. This permits translation into a single fusion polypeptide that retains the biological activity of both component polypeptides.

A peptide linker sequence may be employed to separate the first and second polypeptide components by a distance sufficient to ensure that each polypeptide folds into its secondary and tertiary structures. Such a peptide linker sequence is incorporated into the fusion polypeptide using standard techniques well known in the art. Suitable peptide linker sequences may be chosen based on the following factors: (1) their ability to adopt a flexible extended conformation; (2) their inability to adopt a secondary structure that could interact with functional epitopes on the first and second polypeptides; and (3) the lack of hydrophobic or charged residues that might react with the polypeptide functional epitopes. Preferred peptide linker sequences contain Gly, Asn and Ser residues. Other near neutral amino acids, such as Thr and Ala may also be used in the linker sequence. Amino acid sequences which may be usefully employed as linkers include those disclosed in Maratea et al., *Gene 40*:39-46, 1985; Murphy et al., *Proc. Natl. Acad. Sci. USA 83*:8258-8262, 1986; U.S. Patent No. 4,935,233 and U.S. Patent No. 4,751,180. The linker sequence may generally be from 1 to about 50 amino acids in length. Linker sequences are not required when the first and second polypeptides have non-essential N-terminal amino acid regions that can be used to separate the functional domains and prevent steric interference.

The ligated DNA sequences are operably linked to suitable transcriptional or translational regulatory elements. The regulatory elements responsible for expression of DNA are located only 5' to the DNA sequence encoding the first polypeptides. Similarly, stop codons required to end translation and transcription termination signals are only present 3' to the DNA sequence encoding the second polypeptide.

The fusion polypeptide can comprise a polypeptide as described herein together with an unrelated immunogenic protein, such as an immunogenic protein capable of eliciting a recall response. Examples of such proteins include tetanus,

tuberculosis and hepatitis proteins (*see*, for example, Stoute et al. *New Engl. J. Med.*, *336*:86-91, 1997).

In one preferred embodiment, the immunological fusion partner is derived from a Mycobacterium sp., such as a Mycobacterium tuberculosis-derived Ra12 fragment. Ra12 compositions and methods for their use in enhancing the expression and/or immunogenicity of heterologous polynucleotide/polypeptide sequences is described in U.S. Patent Application 60/158,585, the disclosure of which is incorporated herein by reference in its entirety. Briefly, Ra12 refers to a polynucleotide region that is a subsequence of a *Mycobacterium tuberculosis* MTB32A nucleic acid. MTB32A is a serine protease of 32 KD molecular weight encoded by a gene in virulent and avirulent strains of *M. tuberculosis*. The nucleotide sequence and amino acid sequence of MTB32A have been described (for example, U.S. Patent Application 60/158,585; see also, Skeiky *et al.*, *Infection and Immun.* (1999) 67:3998-4007, incorporated herein by reference). C-terminal fragments of the MTB32A coding sequence express at high levels and remain as a soluble polypeptides throughout the purification process. Moreover, Ra12 may enhance the immunogenicity of heterologous immunogenic polypeptides with which it is fused. One preferred Ra12 fusion polypeptide comprises a 14 KD C-terminal fragment corresponding to amino acid residues 192 to 323 of MTB32A. Other preferred Ra12 polynucleotides generally comprise at least about 15 consecutive nucleotides, at least about 30 nucleotides, at least about 60 nucleotides, at least about 100 nucleotides, at least about 200 nucleotides, or at least about 300 nucleotides that encode a portion of a Ra12 polypeptide. Ra12 polynucleotides may comprise a native sequence (*i.e.*, an endogenous sequence that encodes a Ra12 polypeptide or a portion thereof) or may comprise a variant of such a sequence. Ra12 polynucleotide variants may contain one or more substitutions, additions, deletions and/or insertions such that the biological activity of the encoded fusion polypeptide is not substantially diminished, relative to a fusion polypeptide comprising a native Ra12 polypeptide. Variants preferably exhibit at least about 70% identity, more preferably at least about 80% identity and most preferably at least about 90% identity to a polynucleotide sequence that encodes a native Ra12 polypeptide or a portion thereof.

Within other preferred embodiments, an immunological fusion partner is derived from protein D, a surface protein of the gram-negative bacterium Haemophilus influenza B (WO 91/18926). Preferably, a protein D derivative comprises approximately the first third of the protein (*e.g.*, the first N-terminal 100-110 amino acids), and a protein D derivative may be lipidated. Within certain preferred embodiments, the first 109 residues of a Lipoprotein D fusion partner is included on the N-terminus to provide the polypeptide with additional exogenous T-cell epitopes and to increase the expression level in *E. coli* (thus functioning as an expression enhancer). The lipid tail ensures optimal presentation of the antigen to antigen presenting cells. Other fusion partners include the non-structural protein from influenzae virus, NS1 (hemaglutinin). Typically, the N-terminal 81 amino acids are used, although different fragments that include T-helper epitopes may be used.

In another embodiment, the immunological fusion partner is the protein known as LYTA, or a portion thereof (preferably a C-terminal portion). LYTA is derived from *Streptococcus pneumoniae*, which synthesizes an N-acetyl-L-alanine amidase known as amidase LYTA (encoded by the LytA gene; *Gene 43*:265-292, 1986). LYTA is an autolysin that specifically degrades certain bonds in the peptidoglycan backbone. The C-terminal domain of the LYTA protein is responsible for the affinity to the choline or to some choline analogues such as DEAE. This property has been exploited for the development of *E. coli* C-LYTA expressing plasmids useful for expression of fusion proteins. Purification of hybrid proteins containing the C-LYTA fragment at the amino terminus has been described (*see Biotechnology 10*:795-798, 1992). Within a preferred embodiment, a repeat portion of LYTA may be incorporated into a fusion polypeptide. A repeat portion is found in the C-terminal region starting at residue 178. A particularly preferred repeat portion incorporates residues 188-305.

Yet another illustrative embodiment involves fusion polypeptides, and the polynucleotides encoding them, wherein the fusion partner comprises a targeting signal capable of directing a polypeptide to the endosomal/lysosomal compartment, as described in U.S. Patent No. 5,633,234. An immunogenic polypeptide of the invention, when fused with this targeting signal, will associate more efficiently with MHC class II

molecules and thereby provide enhanced in vivo stimulation of $CD4^+$ T-cells specific for the polypeptide.

Polypeptides of the invention are prepared using any of a variety of well known synthetic and/or recombinant techniques, the latter of which are further described below. Polypeptides, portions and other variants generally less than about 150 amino acids can be generated by synthetic means, using techniques well known to those of ordinary skill in the art. In one illustrative example, such polypeptides are synthesized using any of the commercially available solid-phase techniques, such as the Merrifield solid-phase synthesis method, where amino acids are sequentially added to a growing amino acid chain. *See* Merrifield, *J. Am. Chem. Soc. 85*:2149-2146, 1963. Equipment for automated synthesis of polypeptides is commercially available from suppliers such as Perkin Elmer/Applied BioSystems Division (Foster City, CA), and may be operated according to the manufacturer's instructions.

In general, polypeptide compositions (including fusion polypeptides) of the invention are isolated. An "isolated" polypeptide is one that is removed from its original environment. For example, a naturally-occurring protein or polypeptide is isolated if it is separated from some or all of the coexisting materials in the natural system. Preferably, such polypeptides are also purified, *e.g.*, are at least about 90% pure, more preferably at least about 95% pure and most preferably at least about 99% pure.

<u>Polynucleotide Compositions</u>

The present invention, in other aspects, provides polynucleotide compositions. The terms "DNA" and "polynucleotide" are used essentially interchangeably herein to refer to a DNA molecule that has been isolated free of total genomic DNA of a particular species. "Isolated," as used herein, means that a polynucleotide is substantially away from other coding sequences, and that the DNA molecule does not contain large portions of unrelated coding DNA, such as large chromosomal fragments or other functional genes or polypeptide coding regions. Of course, this refers to the DNA molecule as originally isolated, and does not exclude genes or coding regions later added to the segment by the hand of man.

As will be understood by those skilled in the art, the polynucleotide compositions of this invention can include genomic sequences, extra-genomic and plasmid-encoded sequences and smaller engineered gene segments that express, or may be adapted to express, proteins, polypeptides, peptides and the like. Such segments may be naturally isolated, or modified synthetically by the hand of man.

As will be also recognized by the skilled artisan, polynucleotides of the invention may be single-stranded (coding or antisense) or double-stranded, and may be DNA (genomic, cDNA or synthetic) or RNA molecules. RNA molecules may include HnRNA molecules, which contain introns and correspond to a DNA molecule in a one-to-one manner, and mRNA molecules, which do not contain introns. Additional coding or non-coding sequences may, but need not, be present within a polynucleotide of the present invention, and a polynucleotide may, but need not, be linked to other molecules and/or support materials.

Polynucleotides may comprise a native sequence (*i.e.,* an endogenous sequence that encodes a polypeptide/protein of the invention or a portion thereof) or may comprise a sequence that encodes a variant or derivative, preferably and immunogenic variant or derivative, of such a sequence.

Therefore, according to another aspect of the present invention, polynucleotide compositions are provided that comprise some or all of a polynucleotide sequence set forth in any one of SEQ ID NO:1-934, complements of a polynucleotide sequence set forth in any one of SEQ ID NO:1-934, and degenerate variants of a polynucleotide sequence set forth in any one of SEQ ID NO:1-934. In certain preferred embodiments, the polynucleotide sequences set forth herein encode immunogenic polypeptides, as described above.

In other related embodiments, the present invention provides polynucleotide variants having substantial identity to the sequences disclosed herein in SEQ ID NO:1-934, for example those comprising at least 70% sequence identity, preferably at least 75%, 80%, 85%, 90%, 95%, 96%, 97%, 98%, or 99% or higher, sequence identity compared to a polynucleotide sequence of this invention using the methods described herein, (*e.g.,* BLAST analysis using standard parameters, as described below). One skilled in this art will recognize that these values can be

appropriately adjusted to determine corresponding identity of proteins encoded by two nucleotide sequences by taking into account codon degeneracy, amino acid similarity, reading frame positioning and the like.

Typically, polynucleotide variants will contain one or more substitutions, additions, deletions and/or insertions, preferably such that the immunogenicity of the polypeptide encoded by the variant polynucleotide is not substantially diminished relative to a polypeptide encoded by a polynucleotide sequence specifically set forth herein). The term "variants" should also be understood to encompasses homologous genes of xenogenic origin.

In additional embodiments, the present invention provides polynucleotide fragments comprising or consisting of various lengths of contiguous stretches of sequence identical to or complementary to one or more of the sequences disclosed herein. For example, polynucleotides are provided by this invention that comprise or consist of at least about 10, 15, 20, 30, 40, 50, 75, 100, 150, 200, 300, 400, 500 or 1000 or more contiguous nucleotides of one or more of the sequences disclosed herein as well as all intermediate lengths there between. It will be readily understood that "intermediate lengths", in this context, means any length between the quoted values, such as 16, 17, 18, 19, *etc.*; 21, 22, 23, *etc.*; 30, 31, 32, *etc.*; 50, 51, 52, 53, *etc.*; 100, 101, 102, 103, *etc.*; 150, 151, 152, 153, *etc.*; including all integers through 200-500; 500-1,000, and the like. A polynucleotide sequence as described here may be extended at one or both ends by additional nucleotides not found in the native sequence. This additional sequence may consist of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, or 20 nucleotides at either end of the disclosed sequence or at both ends of the disclosed sequence.

In another embodiment of the invention, polynucleotide compositions are provided that are capable of hybridizing under moderate to high stringency conditions to a polynucleotide sequence provided herein, or a fragment thereof, or a complementary sequence thereof. Hybridization techniques are well known in the art of molecular biology. For purposes of illustration, suitable moderately stringent conditions for testing the hybridization of a polynucleotide of this invention with other polynucleotides include prewashing in a solution of 5 X SSC, 0.5% SDS, 1.0 mM EDTA (pH 8.0);

hybridizing at 50°C-60°C, 5 X SSC, overnight; followed by washing twice at 65°C for 20 minutes with each of 2X, 0.5X and 0.2X SSC containing 0.1% SDS. One skilled in the art will understand that the stringency of hybridization can be readily manipulated, such as by altering the salt content of the hybridization solution and/or the temperature at which the hybridization is performed. For example, in another embodiment, suitable highly stringent hybridization conditions include those described above, with the exception that the temperature of hybridization is increased, *e.g.*, to 60-65°C or 65-70°C.

In certain preferred embodiments, the polynucleotides described above, *e.g.*, polynucleotide variants, fragments and hybridizing sequences, encode polypeptides that are immunologically cross-reactive with a polypeptide sequence specifically set forth herein. In other preferred embodiments, such polynucleotides encode polypeptides that have a level of immunogenic activity of at least about 50%, preferably at least about 70%, and more preferably at least about 90% of that for a polypeptide sequence specifically set forth herein.

The polynucleotides of the present invention, or fragments thereof, regardless of the length of the coding sequence itself, may be combined with other DNA sequences, such as promoters, polyadenylation signals, additional restriction enzyme sites, multiple cloning sites, other coding segments, and the like, such that their overall length may vary considerably. It is therefore contemplated that a nucleic acid fragment of almost any length may be employed, with the total length preferably being limited by the ease of preparation and use in the intended recombinant DNA protocol. For example, illustrative polynucleotide segments with total lengths of about 10,000, about 5000, about 3000, about 2,000, about 1,000, about 500, about 200, about 100, about 50 base pairs in length, and the like, (including all intermediate lengths) are contemplated to be useful in many implementations of this invention.

When comparing polynucleotide sequences, two sequences are said to be "identical" if the sequence of nucleotides in the two sequences is the same when aligned for maximum correspondence, as described below. Comparisons between two sequences are typically performed by comparing the sequences over a comparison window to identify and compare local regions of sequence similarity. A "comparison

window" as used herein, refers to a segment of at least about 20 contiguous positions, usually 30 to about 75, 40 to about 50, in which a sequence may be compared to a reference sequence of the same number of contiguous positions after the two sequences are optimally aligned.

Optimal alignment of sequences for comparison may be conducted using the Megalign program in the Lasergene suite of bioinformatics software (DNASTAR, Inc., Madison, WI), using default parameters. This program embodies several alignment schemes described in the following references: Dayhoff, M.O. (1978) A model of evolutionary change in proteins – Matrices for detecting distant relationships. In Dayhoff, M.O. (ed.) Atlas of Protein Sequence and Structure, National Biomedical Research Foundation, Washington DC Vol. 5, Suppl. 3, pp. 345-358; Hein J. (1990) Unified Approach to Alignment and Phylogenes pp. 626-645 *Methods in Enzymology* vol. 183, Academic Press, Inc., San Diego, CA; Higgins, D.G. and Sharp, P.M. (1989) *CABIOS 5*:151-153; Myers, E.W. and Muller W. (1988) *CABIOS 4*:11-17; Robinson, E.D. (1971) *Comb. Theor 11*:105; Santou, N. Nes, M. (1987) *Mol. Biol. Evol. 4*:406-425; Sneath, P.H.A. and Sokal, R.R. (1973) *Numerical Taxonomy – the Principles and Practice of Numerical Taxonomy*, Freeman Press, San Francisco, CA; Wilbur, W.J. and Lipman, D.J. (1983) *Proc. Natl. Acad., Sci. USA 80*:726-730.

Alternatively, optimal alignment of sequences for comparison may be conducted by the local identity algorithm of Smith and Waterman (1981) *Add. APL. Math* 2:482, by the identity alignment algorithm of Needleman and Wunsch (1970) *J. Mol. Biol.* 48:443, by the search for similarity methods of Pearson and Lipman (1988) *Proc. Natl. Acad. Sci. USA* 85: 2444, by computerized implementations of these algorithms (GAP, BESTFIT, BLAST, FASTA, and TFASTA in the Wisconsin Genetics Software Package, Genetics Computer Group (GCG), 575 Science Dr., Madison, WI), or by inspection.

One preferred example of algorithms that are suitable for determining percent sequence identity and sequence similarity are the BLAST and BLAST 2.0 algorithms, which are described in Altschul et al. (1977) *Nucl. Acids Res.* 25:3389-3402 and Altschul et al. (1990) *J. Mol. Biol.* 215:403-410, respectively. BLAST and BLAST 2.0 can be used, for example with the parameters described herein, to determine percent

sequence identity for the polynucleotides of the invention. Software for performing BLAST analyses is publicly available through the National Center for Biotechnology Information. In one illustrative example, cumulative scores can be calculated using, for nucleotide sequences, the parameters M (reward score for a pair of matching residues; always >0) and N (penalty score for mismatching residues; always <0). Extension of the word hits in each direction are halted when: the cumulative alignment score falls off by the quantity X from its maximum achieved value; the cumulative score goes to zero or below, due to the accumulation of one or more negative-scoring residue alignments; or the end of either sequence is reached. The BLAST algorithm parameters W, T and X determine the sensitivity and speed of the alignment. The BLASTN program (for nucleotide sequences) uses as defaults a wordlength (W) of 11, and expectation (E) of 10, and the BLOSUM62 scoring matrix (see Henikoff and Henikoff (1989) *Proc. Natl. Acad. Sci. USA* 89:10915) alignments, (B) of 50, expectation (E) of 10, M=5, N=-4 and a comparison of both strands.

Preferably, the "percentage of sequence identity" is determined by comparing two optimally aligned sequences over a window of comparison of at least 20 positions, wherein the portion of the polynucleotide sequence in the comparison window may comprise additions or deletions (*i.e.,* gaps) of 20 percent or less, usually 5 to 15 percent, or 10 to 12 percent, as compared to the reference sequences (which does not comprise additions or deletions) for optimal alignment of the two sequences. The percentage is calculated by determining the number of positions at which the identical nucleic acid bases occurs in both sequences to yield the number of matched positions, dividing the number of matched positions by the total number of positions in the reference sequence (*i.e.,* the window size) and multiplying the results by 100 to yield the percentage of sequence identity.

It will be appreciated by those of ordinary skill in the art that, as a result of the degeneracy of the genetic code, there are many nucleotide sequences that encode a polypeptide as described herein. Some of these polynucleotides bear minimal homology to the nucleotide sequence of any native gene. Nonetheless, polynucleotides that vary due to differences in codon usage are specifically contemplated by the present invention. Further, alleles of the genes comprising the polynucleotide sequences

provided herein are within the scope of the present invention. Alleles are endogenous genes that are altered as a result of one or more mutations, such as deletions, additions and/or substitutions of nucleotides. The resulting mRNA and protein may, but need not, have an altered structure or function. Alleles may be identified using standard techniques (such as hybridization, amplification and/or database sequence comparison).

Therefore, in another embodiment of the invention, a mutagenesis approach, such as site-specific mutagenesis, is employed for the preparation of immunogenic variants and/or derivatives of the polypeptides described herein. By this approach, specific modifications in a polypeptide sequence can be made through mutagenesis of the underlying polynucleotides that encode them. These techniques provides a straightforward approach to prepare and test sequence variants, for example, incorporating one or more of the foregoing considerations, by introducing one or more nucleotide sequence changes into the polynucleotide.

Site-specific mutagenesis allows the production of mutants through the use of specific oligonucleotide sequences which encode the DNA sequence of the desired mutation, as well as a sufficient number of adjacent nucleotides, to provide a primer sequence of sufficient size and sequence complexity to form a stable duplex on both sides of the deletion junction being traversed. Mutations may be employed in a selected polynucleotide sequence to improve, alter, decrease, modify, or otherwise change the properties of the polynucleotide itself, and/or alter the properties, activity, composition, stability, or primary sequence of the encoded polypeptide.

In certain embodiments of the present invention, the inventors contemplate the mutagenesis of the disclosed polynucleotide sequences to alter one or more properties of the encoded polypeptide, such as the immunogenicity of a polypeptide vaccine. The techniques of site-specific mutagenesis are well-known in the art, and are widely used to create variants of both polypeptides and polynucleotides. For example, site-specific mutagenesis is often used to alter a specific portion of a DNA molecule. In such embodiments, a primer comprising typically about 14 to about 25 nucleotides or so in length is employed, with about 5 to about 10 residues on both sides of the junction of the sequence being altered.

As will be appreciated by those of skill in the art, site-specific mutagenesis techniques have often employed a phage vector that exists in both a single stranded and double stranded form. Typical vectors useful in site-directed mutagenesis include vectors such as the M13 phage. These phage are readily commercially-available and their use is generally well-known to those skilled in the art. Double-stranded plasmids are also routinely employed in site directed mutagenesis that eliminates the step of transferring the gene of interest from a plasmid to a phage.

In general, site-directed mutagenesis in accordance herewith is performed by first obtaining a single-stranded vector or melting apart of two strands of a double-stranded vector that includes within its sequence a DNA sequence that encodes the desired peptide. An oligonucleotide primer bearing the desired mutated sequence is prepared, generally synthetically. This primer is then annealed with the single-stranded vector, and subjected to DNA polymerizing enzymes such as *E. coli* polymerase I Klenow fragment, in order to complete the synthesis of the mutation-bearing strand. Thus, a heteroduplex is formed wherein one strand encodes the original non-mutated sequence and the second strand bears the desired mutation. This heteroduplex vector is then used to transform appropriate cells, such as *E. coli* cells, and clones are selected which include recombinant vectors bearing the mutated sequence arrangement.

The preparation of sequence variants of the selected peptide-encoding DNA segments using site-directed mutagenesis provides a means of producing potentially useful species and is not meant to be limiting as there are other ways in which sequence variants of peptides and the DNA sequences encoding them may be obtained. For example, recombinant vectors encoding the desired peptide sequence may be treated with mutagenic agents, such as hydroxylamine, to obtain sequence variants. Specific details regarding these methods and protocols are found in the teachings of Maloy *et al.*, 1994; Segal, 1976; Prokop and Bajpai, 1991; Kuby, 1994; and Maniatis *et al.*, 1982, each incorporated herein by reference, for that purpose.

As used herein, the term "oligonucleotide directed mutagenesis procedure" refers to template-dependent processes and vector-mediated propagation which result in an increase in the concentration of a specific nucleic acid molecule relative to its initial concentration, or in an increase in the concentration of a detectable

signal, such as amplification. As used herein, the term "oligonucleotide directed mutagenesis procedure" is intended to refer to a process that involves the template-dependent extension of a primer molecule. The term template dependent process refers to nucleic acid synthesis of an RNA or a DNA molecule wherein the sequence of the newly synthesized strand of nucleic acid is dictated by the well-known rules of complementary base pairing (see, for example, Watson, 1987). Typically, vector mediated methodologies involve the introduction of the nucleic acid fragment into a DNA or RNA vector, the clonal amplification of the vector, and the recovery of the amplified nucleic acid fragment. Examples of such methodologies are provided by U. S. Patent No. 4,237,224, specifically incorporated herein by reference in its entirety.

In another approach for the production of polypeptide variants of the present invention, recursive sequence recombination, as described in U.S. Patent No. 5,837,458, may be employed. In this approach, iterative cycles of recombination and screening or selection are performed to "evolve" individual polynucleotide variants of the invention having, for example, enhanced immunogenic activity.

In other embodiments of the present invention, the polynucleotide sequences provided herein can be advantageously used as probes or primers for nucleic acid hybridization. As such, it is contemplated that nucleic acid segments that comprise or consist of a sequence region of at least about a 15 nucleotide long contiguous sequence that has the same sequence as, or is complementary to, a 15 nucleotide long contiguous sequence disclosed herein will find particular utility. Longer contiguous identical or complementary sequences, *e.g.*, those of about 20, 30, 40, 50, 100, 200, 500, 1000 (including all intermediate lengths) and even up to full length sequences will also be of use in certain embodiments.

The ability of such nucleic acid probes to specifically hybridize to a sequence of interest will enable them to be of use in detecting the presence of complementary sequences in a given sample. However, other uses are also envisioned, such as the use of the sequence information for the preparation of mutant species primers, or primers for use in preparing other genetic constructions.

Polynucleotide molecules having sequence regions consisting of contiguous nucleotide stretches of 10-14, 15-20, 30, 50, or even of 100-200 nucleotides

or so (including intermediate lengths as well), identical or complementary to a polynucleotide sequence disclosed herein, are particularly contemplated as hybridization probes for use in, *e.g.*, Southern and Northern blotting. This would allow a gene product, or fragment thereof, to be analyzed, both in diverse cell types and also in various bacterial cells. The total size of fragment, as well as the size of the complementary stretch(es), will ultimately depend on the intended use or application of the particular nucleic acid segment. Smaller fragments will generally find use in hybridization embodiments, wherein the length of the contiguous complementary region may be varied, such as between about 15 and about 100 nucleotides, but larger contiguous complementarity stretches may be used, according to the length complementary sequences one wishes to detect.

The use of a hybridization probe of about 15-25 nucleotides in length allows the formation of a duplex molecule that is both stable and selective. Molecules having contiguous complementary sequences over stretches greater than 15 bases in length are generally preferred, though, in order to increase stability and selectivity of the hybrid, and thereby improve the quality and degree of specific hybrid molecules obtained. One will generally prefer to design nucleic acid molecules having gene-complementary stretches of 15 to 25 contiguous nucleotides, or even longer where desired.

Hybridization probes may be selected from any portion of any of the sequences disclosed herein. All that is required is to review the sequences set forth herein, or to any continuous portion of the sequences, from about 15-25 nucleotides in length up to and including the full length sequence, that one wishes to utilize as a probe or primer. The choice of probe and primer sequences may be governed by various factors. For example, one may wish to employ primers from towards the termini of the total sequence.

Small polynucleotide segments or fragments may be readily prepared by, for example, directly synthesizing the fragment by chemical means, as is commonly practiced using an automated oligonucleotide synthesizer. Also, fragments may be obtained by application of nucleic acid reproduction technology, such as the PCR™ technology of U. S. Patent 4,683,202 (incorporated herein by reference), by introducing

selected sequences into recombinant vectors for recombinant production, and by other recombinant DNA techniques generally known to those of skill in the art of molecular biology.

The nucleotide sequences of the invention may be used for their ability to selectively form duplex molecules with complementary stretches of the entire gene or gene fragments of interest. Depending on the application envisioned, one will typically desire to employ varying conditions of hybridization to achieve varying degrees of selectivity of probe towards target sequence. For applications requiring high selectivity, one will typically desire to employ relatively stringent conditions to form the hybrids, *e.g.*, one will select relatively low salt and/or high temperature conditions, such as provided by a salt concentration of from about 0.02 M to about 0.15 M salt at temperatures of from about 50°C to about 70°C. Such selective conditions tolerate little, if any, mismatch between the probe and the template or target strand, and would be particularly suitable for isolating related sequences.

Of course, for some applications, for example, where one desires to prepare mutants employing a mutant primer strand hybridized to an underlying template, less stringent (reduced stringency) hybridization conditions will typically be needed in order to allow formation of the heteroduplex. In these circumstances, one may desire to employ salt conditions such as those of from about 0.15 M to about 0.9 M salt, at temperatures ranging from about 20°C to about 55°C. Cross-hybridizing species can thereby be readily identified as positively hybridizing signals with respect to control hybridizations. In any case, it is generally appreciated that conditions can be rendered more stringent by the addition of increasing amounts of formamide, which serves to destabilize the hybrid duplex in the same manner as increased temperature. Thus, hybridization conditions can be readily manipulated, and thus will generally be a method of choice depending on the desired results.

According to another embodiment of the present invention, polynucleotide compositions comprising antisense oligonucleotides are provided. Antisense oligonucleotides have been demonstrated to be effective and targeted inhibitors of protein synthesis, and, consequently, provide a therapeutic approach by which a disease can be treated by inhibiting the synthesis of proteins that contribute to

the disease. The efficacy of antisense oligonucleotides for inhibiting protein synthesis is well established. For example, the synthesis of polygalactauronase and the muscarine type 2 acetylcholine receptor are inhibited by antisense oligonucleotides directed to their respective mRNA sequences (U. S. Patent 5,739,119 and U. S. Patent 5,759,829). Further, examples of antisense inhibition have been demonstrated with the nuclear protein cyclin, the multiple drug resistance gene (MDG1), ICAM-1, E-selectin, STK-1, striatal $GABA_A$ receptor and human EGF (Jaskulski *et al.*, Science. 1988 Jun 10;240(4858):1544-6; Vasanthakumar and Ahmed, Cancer Commun. 1989;1(4):225-32; Peris *et al.*, Brain Res Mol Brain Res. 1998 Jun 15;57(2):310-20; U. S. Patent 5,801,154; U.S. Patent 5,789,573; U. S. Patent 5,718,709 and U.S. Patent 5,610,288). Antisense constructs have also been described that inhibit and can be used to treat a variety of abnormal cellular proliferations, *e.g.* cancer (U. S. Patent 5,747,470; U. S. Patent 5,591,317 and U. S. Patent 5,783,683).

Therefore, in certain embodiments, the present invention provides oligonucleotide sequences that comprise all, or a portion of, any sequence that is capable of specifically binding to polynucleotide sequence described herein, or a complement thereof. In one embodiment, the antisense oligonucleotides comprise DNA or derivatives thereof. In another embodiment, the oligonucleotides comprise RNA or derivatives thereof. In a third embodiment, the oligonucleotides are modified DNAs comprising a phosphorothioated modified backbone. In a fourth embodiment, the oligonucleotide sequences comprise peptide nucleic acids or derivatives thereof. In each case, preferred compositions comprise a sequence region that is complementary, and more preferably substantially-complementary, and even more preferably, completely complementary to one or more portions of polynucleotides disclosed herein. Selection of antisense compositions specific for a given gene sequence is based upon analysis of the chosen target sequence and determination of secondary structure, $T_m$, binding energy, and relative stability. Antisense compositions may be selected based upon their relative inability to form dimers, hairpins, or other secondary structures that would reduce or prohibit specific binding to the target mRNA in a host cell. Highly preferred target regions of the mRNA, are those which are at or near the AUG translation initiation codon, and those sequences which are substantially complementary

to 5' regions of the mRNA. These secondary structure analyses and target site selection considerations can be performed, for example, using v.4 of the OLIGO primer analysis software and/or the BLASTN 2.0.5 algorithm software (Altschul *et al.*, Nucleic Acids Res. 1997, 25(17):3389-402).

The use of an antisense delivery method employing a short peptide vector, termed MPG (27 residues), is also contemplated. The MPG peptide contains a hydrophobic domain derived from the fusion sequence of HIV gp41 and a hydrophilic domain from the nuclear localization sequence of SV40 T-antigen (Morris *et al.*, Nucleic Acids Res. 1997 Jul 15;25(14):2730-6). It has been demonstrated that several molecules of the MPG peptide coat the antisense oligonucleotides and can be delivered into cultured mammalian cells in less than 1 hour with relatively high efficiency (90%). Further, the interaction with MPG strongly increases both the stability of the oligonucleotide to nuclease and the ability to cross the plasma membrane.

According to another embodiment of the invention, the polynucleotide compositions described herein are used in the design and preparation of ribozyme molecules for inhibiting expression of the tumor polypeptides and proteins of the present invention in tumor cells. Ribozymes are RNA-protein complexes that cleave nucleic acids in a site-specific fashion. Ribozymes have specific catalytic domains that possess endonuclease activity (Kim and Cech, Proc Natl Acad Sci U S A. 1987 Dec;84(24):8788-92; Forster and Symons, Cell. 1987 Apr 24;49(2):211-20). For example, a large number of ribozymes accelerate phosphoester transfer reactions with a high degree of specificity, often cleaving only one of several phosphoesters in an oligonucleotide substrate (Cech *et al.*, Cell. 1981 Dec;27(3 Pt 2):487-96; Michel and Westhof, J Mol Biol. 1990 Dec 5;216(3):585-610; Reinhold-Hurek and Shub, Nature. 1992 May 14;357(6374):173-6). This specificity has been attributed to the requirement that the substrate bind via specific base-pairing interactions to the internal guide sequence ("IGS") of the ribozyme prior to chemical reaction.

Six basic varieties of naturally-occurring enzymatic RNAs are known presently. Each can catalyze the hydrolysis of RNA phosphodiester bonds *in trans* (and thus can cleave other RNA molecules) under physiological conditions. In general, enzymatic nucleic acids act by first binding to a target RNA. Such binding occurs

through the target binding portion of a enzymatic nucleic acid which is held in close proximity to an enzymatic portion of the molecule that acts to cleave the target RNA. Thus, the enzymatic nucleic acid first recognizes and then binds a target RNA through complementary base-pairing, and once bound to the correct site, acts enzymatically to cut the target RNA. Strategic cleavage of such a target RNA will destroy its ability to direct synthesis of an encoded protein. After an enzymatic nucleic acid has bound and cleaved its RNA target, it is released from that RNA to search for another target and can repeatedly bind and cleave new targets.

The enzymatic nature of a ribozyme is advantageous over many technologies, such as antisense technology (where a nucleic acid molecule simply binds to a nucleic acid target to block its translation) since the concentration of ribozyme necessary to affect a therapeutic treatment is lower than that of an antisense oligonucleotide. This advantage reflects the ability of the ribozyme to act enzymatically. Thus, a single ribozyme molecule is able to cleave many molecules of target RNA. In addition, the ribozyme is a highly specific inhibitor, with the specificity of inhibition depending not only on the base pairing mechanism of binding to the target RNA, but also on the mechanism of target RNA cleavage. Single mismatches, or base-substitutions, near the site of cleavage can completely eliminate catalytic activity of a ribozyme. Similar mismatches in antisense molecules do not prevent their action (Woolf *et al.*, Proc Natl Acad Sci U S A. 1992 Aug 15;89(16):7305-9). Thus, the specificity of action of a ribozyme is greater than that of an antisense oligonucleotide binding the same RNA site.

The enzymatic nucleic acid molecule may be formed in a hammerhead, hairpin, a hepatitis δ virus, group I intron or RNaseP RNA (in association with an RNA guide sequence) or Neurospora VS RNA motif. Examples of hammerhead motifs are described by Rossi *et al.* Nucleic Acids Res. 1992 Sep 11;20(17):4559-65. Examples of hairpin motifs are described by Hampel *et al.* (Eur. Pat. Appl. Publ. No. EP 0360257), Hampel and Tritz, Biochemistry 1989 Jun 13;28(12):4929-33; Hampel *et al.*, Nucleic Acids Res. 1990 Jan 25;18(2):299-304 and U. S. Patent 5,631,359. An example of the hepatitis δ virus motif is described by Perrotta and Been, Biochemistry. 1992 Dec 1;31(47):11843-52; an example of the RNaseP motif is described by Guerrier-Takada

*et al.*, Cell. 1983 Dec;35(3 Pt 2):849-57; Neurospora VS RNA ribozyme motif is described by Collins (Saville and Collins, Cell. 1990 May 18;61(4):685-96; Saville and Collins, Proc Natl Acad Sci U S A. 1991 Oct 1;88(19):8826-30; Collins and Olive, Biochemistry. 1993 Mar 23;32(11):2795-9); and an example of the Group I intron is described in (U. S. Patent 4,987,071). All that is important in an enzymatic nucleic acid molecule of this invention is that it has a specific substrate binding site which is complementary to one or more of the target gene RNA regions, and that it have nucleotide sequences within or surrounding that substrate binding site which impart an RNA cleaving activity to the molecule. Thus the ribozyme constructs need not be limited to specific motifs mentioned herein.

Ribozymes may be designed as described in Int. Pat. Appl. Publ. No. WO 93/23569 and Int. Pat. Appl. Publ. No. WO 94/02595, each specifically incorporated herein by reference) and synthesized to be tested *in vitro* and *in vivo*, as described. Such ribozymes can also be optimized for delivery. While specific examples are provided, those in the art will recognize that equivalent RNA targets in other species can be utilized when necessary.

Ribozyme activity can be optimized by altering the length of the ribozyme binding arms, or chemically synthesizing ribozymes with modifications that prevent their degradation by serum ribonucleases (see *e.g.*, Int. Pat. Appl. Publ. No. WO 92/07065; Int. Pat. Appl. Publ. No. WO 93/15187; Int. Pat. Appl. Publ. No. WO 91/03162; Eur. Pat. Appl. Publ. No. 92110298.4; U. S. Patent 5,334,711; and Int. Pat. Appl. Publ. No. WO 94/13688, which describe various chemical modifications that can be made to the sugar moieties of enzymatic RNA molecules), modifications which enhance their efficacy in cells, and removal of stem II bases to shorten RNA synthesis times and reduce chemical requirements.

Sullivan *et al.* (Int. Pat. Appl. Publ. No. WO 94/02595) describes the general methods for delivery of enzymatic RNA molecules. Ribozymes may be administered to cells by a variety of methods known to those familiar to the art, including, but not restricted to, encapsulation in liposomes, by iontophoresis, or by incorporation into other vehicles, such as hydrogels, cyclodextrins, biodegradable nanocapsules, and bioadhesive microspheres. For some indications, ribozymes may be

directly delivered *ex vivo* to cells or tissues with or without the aforementioned vehicles. Alternatively, the RNA/vehicle combination may be locally delivered by direct inhalation, by direct injection or by use of a catheter, infusion pump or stent. Other routes of delivery include, but are not limited to, intravascular, intramuscular, subcutaneous or joint injection, aerosol inhalation, oral (tablet or pill form), topical, systemic, ocular, intraperitoneal and/or intrathecal delivery. More detailed descriptions of ribozyme delivery and administration are provided in Int. Pat. Appl. Publ. No. WO 94/02595 and Int. Pat. Appl. Publ. No. WO 93/23569, each specifically incorporated herein by reference.

Another means of accumulating high concentrations of a ribozyme(s) within cells is to incorporate the ribozyme-encoding sequences into a DNA expression vector. Transcription of the ribozyme sequences are driven from a promoter for eukaryotic RNA polymerase I (pol I), RNA polymerase II (pol II), or RNA polymerase III (pol III). Transcripts from pol II or pol III promoters will be expressed at high levels in all cells; the levels of a given pol II promoter in a given cell type will depend on the nature of the gene regulatory sequences (enhancers, silencers, *etc.*) present nearby. Prokaryotic RNA polymerase promoters may also be used, providing that the prokaryotic RNA polymerase enzyme is expressed in the appropriate cells Ribozymes expressed from such promoters have been shown to function in mammalian cells. Such transcription units can be incorporated into a variety of vectors for introduction into mammalian cells, including but not restricted to, plasmid DNA vectors, viral DNA vectors (such as adenovirus or adeno-associated vectors), or viral RNA vectors (such as retroviral, semliki forest virus, sindbis virus vectors).

In another embodiment of the invention, peptide nucleic acids (PNAs) compositions are provided. PNA is a DNA mimic in which the nucleobases are attached to a pseudopeptide backbone (Good and Nielsen, Antisense Nucleic Acid Drug Dev. 1997 7(4) 431-37). PNA is able to be utilized in a number methods that traditionally have used RNA or DNA. Often PNA sequences perform better in techniques than the corresponding RNA or DNA sequences and have utilities that are not inherent to RNA or DNA. A review of PNA including methods of making, characteristics of, and methods of using, is provided by Corey (*Trends Biotechnol* 1997

Jun;15(6):224-9). As such, in certain embodiments, one may prepare PNA sequences that are complementary to one or more portions of the ACE mRNA sequence, and such PNA compositions may be used to regulate, alter, decrease, or reduce the translation of ACE-specific mRNA, and thereby alter the level of ACE activity in a host cell to which such PNA compositions have been administered.

PNAs have 2-aminoethyl-glycine linkages replacing the normal phosphodiester backbone of DNA (Nielsen *et al.*, *Science* 1991 Dec 6;254(5037):1497-500; Hanvey *et al.*, Science. 1992 Nov 27;258(5087):1481-5; Hyrup and Nielsen, Bioorg Med Chem. 1996 Jan;4(1):5-23). This chemistry has three important consequences: firstly, in contrast to DNA or phosphorothioate oligonucleotides, PNAs are neutral molecules; secondly, PNAs are achiral, which avoids the need to develop a stereoselective synthesis; and thirdly, PNA synthesis uses standard Boc or Fmoc protocols for solid-phase peptide synthesis, although other methods, including a modified Merrifield method, have been used.

PNA monomers or ready-made oligomers are commercially available from PerSeptive Biosystems (Framingham, MA). PNA syntheses by either Boc or Fmoc protocols are straightforward using manual or automated protocols (Norton *et al.*, Bioorg Med Chem. 1995 Apr;3(4):437-45). The manual protocol lends itself to the production of chemically modified PNAs or the simultaneous synthesis of families of closely related PNAs.

As with peptide synthesis, the success of a particular PNA synthesis will depend on the properties of the chosen sequence. For example, while in theory PNAs can incorporate any combination of nucleotide bases, the presence of adjacent purines can lead to deletions of one or more residues in the product. In expectation of this difficulty, it is suggested that, in producing PNAs with adjacent purines, one should repeat the coupling of residues likely to be added inefficiently. This should be followed by the purification of PNAs by reverse-phase high-pressure liquid chromatography, providing yields and purity of product similar to those observed during the synthesis of peptides.

Modifications of PNAs for a given application may be accomplished by coupling amino acids during solid-phase synthesis or by attaching compounds that

contain a carboxylic acid group to the exposed N-terminal amine. Alternatively, PNAs can be modified after synthesis by coupling to an introduced lysine or cysteine. The ease with which PNAs can be modified facilitates optimization for better solubility or for specific functional requirements. Once synthesized, the identity of PNAs and their derivatives can be confirmed by mass spectrometry. Several studies have made and utilized modifications of PNAs (for example, Norton *et al.*, Bioorg Med Chem. 1995 Apr;3(4):437-45; Petersen *et al.*, J Pept Sci. 1995 May-Jun;1(3):175-83; Orum *et al.*, Biotechniques. 1995 Sep;19(3):472-80; Footer *et al.*, Biochemistry. 1996 Aug 20;35(33):10673-9; Griffith *et al.*, Nucleic Acids Res. 1995 Aug 11;23(15):3003-8; Pardridge *et al.*, Proc Natl Acad Sci U S A. 1995 Jun 6;92(12):5592-6; Boffa *et al.*, Proc Natl Acad Sci U S A. 1995 Mar 14;92(6):1901-5; Gambacorti-Passerini *et al.*, Blood. 1996 Aug 15;88(4):1411-7; Armitage *et al.*, Proc Natl Acad Sci U S A. 1997 Nov 11;94(23):12320-5; Seeger *et al.*, Biotechniques. 1997 Sep;23(3):512-7). U.S. Patent No. 5,700,922 discusses PNA-DNA-PNA chimeric molecules and their uses in diagnostics, modulating protein in organisms, and treatment of conditions susceptible to therapeutics.

Methods of characterizing the antisense binding properties of PNAs are discussed in Rose (Anal Chem. 1993 Dec 15;65(24):3545-9) and Jensen *et al.* (Biochemistry. 1997 Apr 22;36(16):5072-7). Rose uses capillary gel electrophoresis to determine binding of PNAs to their complementary oligonucleotide, measuring the relative binding kinetics and stoichiometry. Similar types of measurements were made by Jensen *et al.* using BIAcore™ technology.

Other applications of PNAs that have been described and will be apparent to the skilled artisan include use in DNA strand invasion, antisense inhibition, mutational analysis, enhancers of transcription, nucleic acid purification, isolation of transcriptionally active genes, blocking of transcription factor binding, genome cleavage, biosensors, *in situ* hybridization, and the like.

Polynucleotide Identification, Characterization and Expression

Polynucleotides compositions of the present invention may be identified, prepared and/or manipulated using any of a variety of well established techniques (see

generally, Sambrook et al., *Molecular Cloning: A Laboratory Manual,* Cold Spring Harbor Laboratories, Cold Spring Harbor, NY, 1989, and other like references). For example, a polynucleotide may be identified, as described in more detail below, by screening a microarray of cDNAs for tumor-associated expression (*i.e.*, expression that is at least two fold greater in a tumor than in normal tissue, as determined using a representative assay provided herein). Such screens may be performed, for example, using the microarray technology of Affymetrix, Inc. (Santa Clara, CA) according to the manufacturer's instructions (and essentially as described by Schena et al., *Proc. Natl. Acad. Sci. USA 93*:10614-10619, 1996 and Heller et al., *Proc. Natl. Acad. Sci. USA 94*:2150-2155, 1997). Alternatively, polynucleotides may be amplified from cDNA prepared from cells expressing the proteins described herein, such as tumor cells.

Many template dependent processes are available to amplify a target sequences of interest present in a sample. One of the best known amplification methods is the polymerase chain reaction (PCR™) which is described in detail in U.S. Patent Nos. 4,683,195, 4,683,202 and 4,800,159, each of which is incorporated herein by reference in its entirety. Briefly, in PCR™, two primer sequences are prepared which are complementary to regions on opposite complementary strands of the target sequence. An excess of deoxynucleoside triphosphates is added to a reaction mixture along with a DNA polymerase (*e.g.*, *Taq* polymerase). If the target sequence is present in a sample, the primers will bind to the target and the polymerase will cause the primers to be extended along the target sequence by adding on nucleotides. By raising and lowering the temperature of the reaction mixture, the extended primers will dissociate from the target to form reaction products, excess primers will bind to the target and to the reaction product and the process is repeated. Preferably reverse transcription and PCR™ amplification procedure may be performed in order to quantify the amount of mRNA amplified. Polymerase chain reaction methodologies are well known in the art.

Any of a number of other template dependent processes, many of which are variations of the PCR ™ amplification technique, are readily known and available in the art. Illustratively, some such methods include the ligase chain reaction (referred to as LCR), described, for example, in Eur. Pat. Appl. Publ. No. 320,308 and U.S. Patent

No. 4,883,750; Qbeta Replicase, described in PCT Intl. Pat. Appl. Publ. No. PCT/US87/00880; Strand Displacement Amplification (SDA) and Repair Chain Reaction (RCR). Still other amplification methods are described in Great Britain Pat. Appl. No. 2 202 328, and in PCT Intl. Pat. Appl. Publ. No. PCT/US89/01025. Other nucleic acid amplification procedures include transcription-based amplification systems (TAS) (PCT Intl. Pat. Appl. Publ. No. WO 88/10315), including nucleic acid sequence based amplification (NASBA) and 3SR. Eur. Pat. Appl. Publ. No. 329,822 describes a nucleic acid amplification process involving cyclically synthesizing single-stranded RNA ("ssRNA"), ssDNA, and double-stranded DNA (dsDNA). PCT Intl. Pat. Appl. Publ. No. WO 89/06700 describes a nucleic acid sequence amplification scheme based on the hybridization of a promoter/primer sequence to a target single-stranded DNA ("ssDNA") followed by transcription of many RNA copies of the sequence. Other amplification methods such as "RACE" (Frohman, 1990), and "one-sided PCR" (Ohara, 1989) are also well-known to those of skill in the art.

An amplified portion of a polynucleotide of the present invention may be used to isolate a full length gene from a suitable library (*e.g.*, a tumor cDNA library) using well known techniques. Within such techniques, a library (cDNA or genomic) is screened using one or more polynucleotide probes or primers suitable for amplification. Preferably, a library is size-selected to include larger molecules. Random primed libraries may also be preferred for identifying 5' and upstream regions of genes. Genomic libraries are preferred for obtaining introns and extending 5' sequences.

For hybridization techniques, a partial sequence may be labeled (*e.g.*, by nick-translation or end-labeling with $^{32}P$) using well known techniques. A bacterial or bacteriophage library is then generally screened by hybridizing filters containing denatured bacterial colonies (or lawns containing phage plaques) with the labeled probe (*see* Sambrook et al., *Molecular Cloning: A Laboratory Manual,* Cold Spring Harbor Laboratories, Cold Spring Harbor, NY, 1989). Hybridizing colonies or plaques are selected and expanded, and the DNA is isolated for further analysis. cDNA clones may be analyzed to determine the amount of additional sequence by, for example, PCR using a primer from the partial sequence and a primer from the vector. Restriction maps and partial sequences may be generated to identify one or more overlapping clones. The

complete sequence may then be determined using standard techniques, which may involve generating a series of deletion clones. The resulting overlapping sequences can then assembled into a single contiguous sequence. A full length cDNA molecule can be generated by ligating suitable fragments, using well known techniques.

Alternatively, amplification techniques, such as those described above, can be useful for obtaining a full length coding sequence from a partial cDNA sequence. One such amplification technique is inverse PCR (*see* Triglia et al., *Nucl. Acids Res.* *16*:8186, 1988), which uses restriction enzymes to generate a fragment in the known region of the gene. The fragment is then circularized by intramolecular ligation and used as a template for PCR with divergent primers derived from the known region. Within an alternative approach, sequences adjacent to a partial sequence may be retrieved by amplification with a primer to a linker sequence and a primer specific to a known region. The amplified sequences are typically subjected to a second round of amplification with the same linker primer and a second primer specific to the known region. A variation on this procedure, which employs two primers that initiate extension in opposite directions from the known sequence, is described in WO 96/38591. Another such technique is known as "rapid amplification of cDNA ends" or RACE. This technique involves the use of an internal primer and an external primer, which hybridizes to a polyA region or vector sequence, to identify sequences that are 5' and 3' of a known sequence. Additional techniques include capture PCR (Lagerstrom et al., *PCR Methods Applic.* *1*:111-19, 1991) and walking PCR (Parker et al., *Nucl. Acids. Res.* *19*:3055-60, 1991). Other methods employing amplification may also be employed to obtain a full length cDNA sequence.

In certain instances, it is possible to obtain a full length cDNA sequence by analysis of sequences provided in an expressed sequence tag (EST) database, such as that available from GenBank. Searches for overlapping ESTs may generally be performed using well known programs (*e.g.*, NCBI BLAST searches), and such ESTs may be used to generate a contiguous full length sequence. Full length DNA sequences may also be obtained by analysis of genomic fragments.

In other embodiments of the invention, polynucleotide sequences or fragments thereof which encode polypeptides of the invention, or fusion proteins or

functional equivalents thereof, may be used in recombinant DNA molecules to direct expression of a polypeptide in appropriate host cells. Due to the inherent degeneracy of the genetic code, other DNA sequences that encode substantially the same or a functionally equivalent amino acid sequence may be produced and these sequences may be used to clone and express a given polypeptide.

As will be understood by those of skill in the art, it may be advantageous in some instances to produce polypeptide-encoding nucleotide sequences possessing non-naturally occurring codons. For example, codons preferred by a particular prokaryotic or eukaryotic host can be selected to increase the rate of protein expression or to produce a recombinant RNA transcript having desirable properties, such as a half-life which is longer than that of a transcript generated from the naturally occurring sequence.

Moreover, the polynucleotide sequences of the present invention can be engineered using methods generally known in the art in order to alter polypeptide encoding sequences for a variety of reasons, including but not limited to, alterations which modify the cloning, processing, and/or expression of the gene product. For example, DNA shuffling by random fragmentation and PCR reassembly of gene fragments and synthetic oligonucleotides may be used to engineer the nucleotide sequences. In addition, site-directed mutagenesis may be used to insert new restriction sites, alter glycosylation patterns, change codon preference, produce splice variants, or introduce mutations, and so forth.

In another embodiment of the invention, natural, modified, or recombinant nucleic acid sequences may be ligated to a heterologous sequence to encode a fusion protein. For example, to screen peptide libraries for inhibitors of polypeptide activity, it may be useful to encode a chimeric protein that can be recognized by a commercially available antibody. A fusion protein may also be engineered to contain a cleavage site located between the polypeptide-encoding sequence and the heterologous protein sequence, so that the polypeptide may be cleaved and purified away from the heterologous moiety.

Sequences encoding a desired polypeptide may be synthesized, in whole or in part, using chemical methods well known in the art (see Caruthers, M. H. et al.

(1980) *Nucl. Acids Res. Symp. Ser.* 215-223, Horn, T. et al. (1980) *Nucl. Acids Res. Symp. Ser.* 225-232). Alternatively, the protein itself may be produced using chemical methods to synthesize the amino acid sequence of a polypeptide, or a portion thereof. For example, peptide synthesis can be performed using various solid-phase techniques (Roberge, J. Y. et al. (1995) *Science 269*:202-204) and automated synthesis may be achieved, for example, using the ABI 431A Peptide Synthesizer (Perkin Elmer, Palo Alto, CA).

A newly synthesized peptide may be substantially purified by preparative high performance liquid chromatography (*e.g.*, Creighton, T. (1983) Proteins, Structures and Molecular Principles, WH Freeman and Co., New York, N.Y.) or other comparable techniques available in the art. The composition of the synthetic peptides may be confirmed by amino acid analysis or sequencing (*e.g.*, the Edman degradation procedure). Additionally, the amino acid sequence of a polypeptide, or any part thereof, may be altered during direct synthesis and/or combined using chemical methods with sequences from other proteins, or any part thereof, to produce a variant polypeptide.

In order to express a desired polypeptide, the nucleotide sequences encoding the polypeptide, or functional equivalents, may be inserted into appropriate expression vector, *i.e.*, a vector which contains the necessary elements for the transcription and translation of the inserted coding sequence. Methods which are well known to those skilled in the art may be used to construct expression vectors containing sequences encoding a polypeptide of interest and appropriate transcriptional and translational control elements. These methods include *in vitro* recombinant DNA techniques, synthetic techniques, and *in vivo* genetic recombination. Such techniques are described, for example, in Sambrook, J. et al. (1989) Molecular Cloning, A Laboratory Manual, Cold Spring Harbor Press, Plainview, N.Y., and Ausubel, F. M. et al. (1989) Current Protocols in Molecular Biology, John Wiley & Sons, New York. N.Y.

A variety of expression vector/host systems may be utilized to contain and express polynucleotide sequences. These include, but are not limited to, microorganisms such as bacteria transformed with recombinant bacteriophage, plasmid, or cosmid DNA expression vectors; yeast transformed with yeast expression vectors;

insect cell systems infected with virus expression vectors (*e.g.*, baculovirus); plant cell systems transformed with virus expression vectors (*e.g.*, cauliflower mosaic virus, CaMV; tobacco mosaic virus, TMV) or with bacterial expression vectors (*e.g.*, Ti or pBR322 plasmids); or animal cell systems.

The "control elements" or "regulatory sequences" present in an expression vector are those non-translated regions of the vector--enhancers, promoters, 5' and 3' untranslated regions--which interact with host cellular proteins to carry out transcription and translation. Such elements may vary in their strength and specificity. Depending on the vector system and host utilized, any number of suitable transcription and translation elements, including constitutive and inducible promoters, may be used. For example, when cloning in bacterial systems, inducible promoters such as the hybrid lacZ promoter of the pBLUESCRIPT phagemid (Stratagene, La Jolla, Calif.) or pSPORT1 plasmid (Gibco BRL, Gaithersburg, MD) and the like may be used. In mammalian cell systems, promoters from mammalian genes or from mammalian viruses are generally preferred. If it is necessary to generate a cell line that contains multiple copies of the sequence encoding a polypeptide, vectors based on SV40 or EBV may be advantageously used with an appropriate selectable marker.

In bacterial systems, any of a number of expression vectors may be selected depending upon the use intended for the expressed polypeptide. For example, when large quantities are needed, for example for the induction of antibodies, vectors which direct high level expression of fusion proteins that are readily purified may be used. Such vectors include, but are not limited to, the multifunctional *E. coli* cloning and expression vectors such as pBLUESCRIPT (Stratagene), in which the sequence encoding the polypeptide of interest may be ligated into the vector in frame with sequences for the amino-terminal Met and the subsequent 7 residues of .beta.-galactosidase so that a hybrid protein is produced; pIN vectors (Van Heeke, G. and S. M. Schuster (1989) *J. Biol. Chem. 264*:5503-5509); and the like. pGEX Vectors (Promega, Madison, Wis.) may also be used to express foreign polypeptides as fusion proteins with glutathione S-transferase (GST). In general, such fusion proteins are soluble and can easily be purified from lysed cells by adsorption to glutathione-agarose beads followed by elution in the presence of free glutathione. Proteins made in such

systems may be designed to include heparin, thrombin, or factor XA protease cleavage sites so that the cloned polypeptide of interest can be released from the GST moiety at will.

In the yeast, Saccharomyces cerevisiae, a number of vectors containing constitutive or inducible promoters such as alpha factor, alcohol oxidase, and PGH may be used. For reviews, see Ausubel et al. (supra) and Grant et al. (1987) *Methods Enzymol.* 153:516-544.

In cases where plant expression vectors are used, the expression of sequences encoding polypeptides may be driven by any of a number of promoters. For example, viral promoters such as the 35S and 19S promoters of CaMV may be used alone or in combination with the omega leader sequence from TMV (Takamatsu, N. (1987) *EMBO J. 6*:307-311. Alternatively, plant promoters such as the small subunit of RUBISCO or heat shock promoters may be used (Coruzzi, G. et al. (1984) *EMBO J. 3*:1671-1680; Broglie, R. et al. (1984) *Science 224*:838-843; and Winter, J. et al. (1991) *Results Probl. Cell Differ. 17*:85-105). These constructs can be introduced into plant cells by direct DNA transformation or pathogen-mediated transfection. Such techniques are described in a number of generally available reviews (see, for example, Hobbs, S. or Murry, L. E. in McGraw Hill Yearbook of Science and Technology (1992) McGraw Hill, New York, N.Y.; pp. 191-196).

An insect system may also be used to express a polypeptide of interest. For example, in one such system, Autographa californica nuclear polyhedrosis virus (AcNPV) is used as a vector to express foreign genes in Spodoptera frugiperda cells or in Trichoplusia larvae. The sequences encoding the polypeptide may be cloned into a non-essential region of the virus, such as the polyhedrin gene, and placed under control of the polyhedrin promoter. Successful insertion of the polypeptide-encoding sequence will render the polyhedrin gene inactive and produce recombinant virus lacking coat protein. The recombinant viruses may then be used to infect, for example, S. frugiperda cells or Trichoplusia larvae in which the polypeptide of interest may be expressed (Engelhard, E. K. et al. (1994) *Proc. Natl. Acad. Sci. 91* :3224-3227).

In mammalian host cells, a number of viral-based expression systems are generally available. For example, in cases where an adenovirus is used as an expression

vector, sequences encoding a polypeptide of interest may be ligated into an adenovirus transcription/translation complex consisting of the late promoter and tripartite leader sequence. Insertion in a non-essential E1 or E3 region of the viral genome may be used to obtain a viable virus which is capable of expressing the polypeptide in infected host cells (Logan, J. and Shenk, T. (1984) *Proc. Natl. Acad. Sci. 81*:3655-3659). In addition, transcription enhancers, such as the Rous sarcoma virus (RSV) enhancer, may be used to increase expression in mammalian host cells.

Specific initiation signals may also be used to achieve more efficient translation of sequences encoding a polypeptide of interest. Such signals include the ATG initiation codon and adjacent sequences. In cases where sequences encoding the polypeptide, its initiation codon, and upstream sequences are inserted into the appropriate expression vector, no additional transcriptional or translational control signals may be needed. However, in cases where only coding sequence, or a portion thereof, is inserted, exogenous translational control signals including the ATG initiation codon should be provided. Furthermore, the initiation codon should be in the correct reading frame to ensure translation of the entire insert. Exogenous translational elements and initiation codons may be of various origins, both natural and synthetic. The efficiency of expression may be enhanced by the inclusion of enhancers which are appropriate for the particular cell system which is used, such as those described in the literature (Scharf, D. et al. (1994) *Results Probl. Cell Differ. 20*:125-162).

In addition, a host cell strain may be chosen for its ability to modulate the expression of the inserted sequences or to process the expressed protein in the desired fashion. Such modifications of the polypeptide include, but are not limited to, acetylation, carboxylation. glycosylation, phosphorylation, lipidation, and acylation. Post-translational processing which cleaves a "prepro" form of the protein may also be used to facilitate correct insertion, folding and/or function. Different host cells such as CHO, COS, HeLa, MDCK, HEK293, and WI38, which have specific cellular machinery and characteristic mechanisms for such post-translational activities, may be chosen to ensure the correct modification and processing of the foreign protein.

For long-term, high-yield production of recombinant proteins, stable expression is generally preferred. For example, cell lines which stably express a

polynucleotide of interest may be transformed using expression vectors which may contain viral origins of replication and/or endogenous expression elements and a selectable marker gene on the same or on a separate vector. Following the introduction of the vector, cells may be allowed to grow for 1-2 days in an enriched media before they are switched to selective media. The purpose of the selectable marker is to confer resistance to selection, and its presence allows growth and recovery of cells which successfully express the introduced sequences. Resistant clones of stably transformed cells may be proliferated using tissue culture techniques appropriate to the cell type.

Any number of selection systems may be used to recover transformed cell lines. These include, but are not limited to, the herpes simplex virus thymidine kinase (Wigler, M. et al. (1977) *Cell 11*:223-32) and adenine phosphoribosyltransferase (Lowy, I. et al. (1990) *Cell 22*:817-23) genes which can be employed in tk.sup.- or aprt.sup.- cells, respectively. Also, antimetabolite, antibiotic or herbicide resistance can be used as the basis for selection; for example, dhfr which confers resistance to methotrexate (Wigler, M. et al. (1980) *Proc. Natl. Acad. Sci. 77*:3567-70); npt, which confers resistance to the aminoglycosides, neomycin and G-418 (Colbere-Garapin, F. et al (1981) *J. Mol. Biol. 150*:1-14); and als or pat, which confer resistance to chlorsulfuron and phosphinotricin acetyltransferase, respectively (Murry, *supra*). Additional selectable genes have been described, for example, trpB, which allows cells to utilize indole in place of tryptophan, or hisD, which allows cells to utilize histinol in place of histidine (Hartman, S. C. and R. C. Mulligan (1988) *Proc. Natl. Acad. Sci. 85*:8047-51).. The use of visible markers has gained popularity with such markers as anthocyanins, beta-glucuronidase and its substrate GUS, and luciferase and its substrate luciferin, being widely used not only to identify transformants, but also to quantify the amount of transient or stable protein expression attributable to a specific vector system (Rhodes, C. A. et al. (1995) *Methods Mol. Biol. 55*:121-131).

Although the presence/absence of marker gene expression suggests that the gene of interest is also present, its presence and expression may need to be confirmed. For example, if the sequence encoding a polypeptide is inserted within a marker gene sequence, recombinant cells containing sequences can be identified by the absence of marker gene function. Alternatively, a marker gene can be placed in tandem

with a polypeptide-encoding sequence under the control of a single promoter. Expression of the marker gene in response to induction or selection usually indicates expression of the tandem gene as well.

Alternatively, host cells that contain and express a desired polynucleotide sequence may be identified by a variety of procedures known to those of skill in the art. These procedures include, but are not limited to, DNA-DNA or DNA-RNA hybridizations and protein bioassay or immunoassay techniques which include, for example, membrane, solution, or chip based technologies for the detection and/or quantification of nucleic acid or protein.

A variety of protocols for detecting and measuring the expression of polynucleotide-encoded products, using either polyclonal or monoclonal antibodies specific for the product are known in the art. Examples include enzyme-linked immunosorbent assay (ELISA), radioimmunoassay (RIA), and fluorescence activated cell sorting (FACS). A two-site, monoclonal-based immunoassay utilizing monoclonal antibodies reactive to two non-interfering epitopes on a given polypeptide may be preferred for some applications, but a competitive binding assay may also be employed. These and other assays are described, among other places, in Hampton, R. et al. (1990; Serological Methods, a Laboratory Manual, APS Press, St Paul. Minn.) and Maddox, D. E. et al. (1983; *J. Exp. Med. 158*:1211-1216).

A wide variety of labels and conjugation techniques are known by those skilled in the art and may be used in various nucleic acid and amino acid assays. Means for producing labeled hybridization or PCR probes for detecting sequences related to polynucleotides include oligolabeling, nick translation, end-labeling or PCR amplification using a labeled nucleotide. Alternatively, the sequences, or any portions thereof may be cloned into a vector for the production of an mRNA probe. Such vectors are known in the art, are commercially available, and may be used to synthesize RNA probes in vitro by addition of an appropriate RNA polymerase such as T7, T3, or SP6 and labeled nucleotides. These procedures may be conducted using a variety of commercially available kits. Suitable reporter molecules or labels, which may be used include radionuclides, enzymes, fluorescent, chemiluminescent, or chromogenic agents as well as substrates, cofactors, inhibitors, magnetic particles, and the like.

Host cells transformed with a polynucleotide sequence of interest may be cultured under conditions suitable for the expression and recovery of the protein from cell culture. The protein produced by a recombinant cell may be secreted or contained intracellularly depending on the sequence and/or the vector used. As will be understood by those of skill in the art, expression vectors containing polynucleotides of the invention may be designed to contain signal sequences which direct secretion of the encoded polypeptide through a prokaryotic or eukaryotic cell membrane. Other recombinant constructions may be used to join sequences encoding a polypeptide of interest to nucleotide sequence encoding a polypeptide domain which will facilitate purification of soluble proteins. Such purification facilitating domains include, but are not limited to, metal chelating peptides such as histidine-tryptophan modules that allow purification on immobilized metals, protein A domains that allow purification on immobilized immunoglobulin, and the domain utilized in the FLAGS extension/affinity purification system (Immunex Corp., Seattle, Wash.). The inclusion of cleavable linker sequences such as those specific for Factor XA or enterokinase (Invitrogen. San Diego, Calif.) between the purification domain and the encoded polypeptide may be used to facilitate purification. One such expression vector provides for expression of a fusion protein containing a polypeptide of interest and a nucleic acid encoding 6 histidine residues preceding a thioredoxin or an enterokinase cleavage site. The histidine residues facilitate purification on IMIAC (immobilized metal ion affinity chromatography) as described in Porath, J. et al. (1992, *Prot. Exp. Purif.* *3*:263-281) while the enterokinase cleavage site provides a means for purifying the desired polypeptide from the fusion protein. A discussion of vectors which contain fusion proteins is provided in Kroll, D. J. et al. (1993; *DNA Cell Biol.* *12*:441-453).

In addition to recombinant production methods, polypeptides of the invention, and fragments thereof, may be produced by direct peptide synthesis using solid-phase techniques (Merrifield J. (1963) *J. Am. Chem. Soc.* *85*:2149-2154). Protein synthesis may be performed using manual techniques or by automation. Automated synthesis may be achieved, for example, using Applied Biosystems 431A Peptide Synthesizer (Perkin Elmer). Alternatively, various fragments may be chemically

synthesized separately and combined using chemical methods to produce the full length molecule.

Antibody Compositions, Fragments Thereof and Other Binding Agents

According to another aspect, the present invention further provides binding agents, such as antibodies and antigen-binding fragments thereof, that exhibit immunological binding to a tumor polypeptide disclosed herein, or to a portion, variant or derivative thereof. An antibody, or antigen-binding fragment thereof, is said to "specifically bind," "immunogically bind," and/or is "immunologically reactive" to a polypeptide of the invention if it reacts at a detectable level (within, for example, an ELISA assay) with the polypeptide, and does not react detectably with unrelated polypeptides under similar conditions.

Immunological binding, as used in this context, generally refers to the non-covalent interactions of the type which occur between an immunoglobulin molecule and an antigen for which the immunoglobulin is specific. The strength, or affinity of immunological binding interactions can be expressed in terms of the dissociation constant ($K_d$) of the interaction, wherein a smaller $K_d$ represents a greater affinity. Immunological binding properties of selected polypeptides can be quantified using methods well known in the art. One such method entails measuring the rates of antigen-binding site/antigen complex formation and dissociation, wherein those rates depend on the concentrations of the complex partners, the affinity of the interaction, and on geometric parameters that equally influence the rate in both directions. Thus, both the "on rate constant" ($K_{on}$) and the "off rate constant" ($K_{off}$) can be determined by calculation of the concentrations and the actual rates of association and dissociation. The ratio of $K_{off}/K_{on}$ enables cancellation of all parameters not related to affinity, and is thus equal to the dissociation constant $K_d$. See, generally, Davies et al. (1990) Annual Rev. Biochem. 59:439-473.

An "antigen-binding site," or "binding portion" of an antibody refers to the part of the immunoglobulin molecule that participates in antigen binding. The antigen binding site is formed by amino acid residues of the N-terminal variable ("V") regions of the heavy ("H") and light ("L") chains. Three highly divergent stretches

within the V regions of the heavy and light chains are referred to as "hypervariable regions" which are interposed between more conserved flanking stretches known as "framework regions," or "FRs". Thus the term "FR" refers to amino acid sequences which are naturally found between and adjacent to hypervariable regions in immunoglobulins. In an antibody molecule, the three hypervariable regions of a light chain and the three hypervariable regions of a heavy chain are disposed relative to each other in three dimensional space to form an antigen-binding surface. The antigen-binding surface is complementary to the three-dimensional surface of a bound antigen, and the three hypervariable regions of each of the heavy and light chains are referred to as "complementarity-determining regions," or "CDRs."

Binding agents may be further capable of differentiating between patients with and without a cancer, such as colon cancer, using the representative assays provided herein. For example, antibodies or other binding agents that bind to a tumor protein will preferably generate a signal indicating the presence of a cancer in at least about 20% of patients with the disease, more preferably at least about 30% of patients. Alternatively, or in addition, the antibody will generate a negative signal indicating the absence of the disease in at least about 90% of individuals without the cancer. To determine whether a binding agent satisfies this requirement, biological samples (*e.g.*, blood, sera, sputum, urine and/or tumor biopsies) from patients with and without a cancer (as determined using standard clinical tests) may be assayed as described herein for the presence of polypeptides that bind to the binding agent. Preferably, a statistically significant number of samples with and without the disease will be assayed. Each binding agent should satisfy the above criteria; however, those of ordinary skill in the art will recognize that binding agents may be used in combination to improve sensitivity.

Any agent that satisfies the above requirements may be a binding agent. For example, a binding agent may be a ribosome, with or without a peptide component, an RNA molecule or a polypeptide. In a preferred embodiment, a binding agent is an antibody or an antigen-binding fragment thereof. Antibodies may be prepared by any of a variety of techniques known to those of ordinary skill in the art. *See, e.g.*, Harlow and Lane, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory, 1988. In

general, antibodies can be produced by cell culture techniques, including the generation of monoclonal antibodies as described herein, or via transfection of antibody genes into suitable bacterial or mammalian cell hosts, in order to allow for the production of recombinant antibodies. In one technique, an immunogen comprising the polypeptide is initially injected into any of a wide variety of mammals (*e.g.*, mice, rats, rabbits, sheep or goats). In this step, the polypeptides of this invention may serve as the immunogen without modification. Alternatively, particularly for relatively short polypeptides, a superior immune response may be elicited if the polypeptide is joined to a carrier protein, such as bovine serum albumin or keyhole limpet hemocyanin. The immunogen is injected into the animal host, preferably according to a predetermined schedule incorporating one or more booster immunizations, and the animals are bled periodically. Polyclonal antibodies specific for the polypeptide may then be purified from such antisera by, for example, affinity chromatography using the polypeptide coupled to a suitable solid support.

Monoclonal antibodies specific for an antigenic polypeptide of interest may be prepared, for example, using the technique of Kohler and Milstein, *Eur. J. Immunol. 6*:511-519, 1976, and improvements thereto. Briefly, these methods involve the preparation of immortal cell lines capable of producing antibodies having the desired specificity (*i.e.*, reactivity with the polypeptide of interest). Such cell lines may be produced, for example, from spleen cells obtained from an animal immunized as described above. The spleen cells are then immortalized by, for example, fusion with a myeloma cell fusion partner, preferably one that is syngeneic with the immunized animal. A variety of fusion techniques may be employed. For example, the spleen cells and myeloma cells may be combined with a nonionic detergent for a few minutes and then plated at low density on a selective medium that supports the growth of hybrid cells, but not myeloma cells. A preferred selection technique uses HAT (hypoxanthine, aminopterin, thymidine) selection. After a sufficient time, usually about 1 to 2 weeks, colonies of hybrids are observed. Single colonies are selected and their culture supernatants tested for binding activity against the polypeptide. Hybridomas having high reactivity and specificity are preferred.

Monoclonal antibodies may be isolated from the supernatants of growing hybridoma colonies. In addition, various techniques may be employed to enhance the yield, such as injection of the hybridoma cell line into the peritoneal cavity of a suitable vertebrate host, such as a mouse. Monoclonal antibodies may then be harvested from the ascites fluid or the blood. Contaminants may be removed from the antibodies by conventional techniques, such as chromatography, gel filtration, precipitation, and extraction. The polypeptides of this invention may be used in the purification process in, for example, an affinity chromatography step.

A number of therapeutically useful molecules are known in the art which comprise antigen-binding sites that are capable of exhibiting immunological binding properties of an antibody molecule. The proteolytic enzyme papain preferentially cleaves IgG molecules to yield several fragments, two of which (the "F(ab)" fragments) each comprise a covalent heterodimer that includes an intact antigen-binding site. The enzyme pepsin is able to cleave IgG molecules to provide several fragments, including the "$F(ab')_2$ " fragment which comprises both antigen-binding sites. An "Fv" fragment can be produced by preferential proteolytic cleavage of an IgM, and on rare occasions IgG or IgA immunoglobulin molecule. Fv fragments are, however, more commonly derived using recombinant techniques known in the art. The Fv fragment includes a non-covalent $V_H$::$V_L$ heterodimer including an antigen-binding site which retains much of the antigen recognition and binding capabilities of the native antibody molecule. Inbar et al. (1972) Proc. Nat. Acad. Sci. USA 69:2659-2662; Hochman et al. (1976) Biochem 15:2706-2710; and Ehrlich et al. (1980) Biochem 19:4091-4096.

A single chain Fv ("sFv") polypeptide is a covalently linked $V_H$::$V_L$ heterodimer which is expressed from a gene fusion including $V_H$- and $V_L$-encoding genes linked by a peptide-encoding linker. Huston et al. (1988) Proc. Nat. Acad. Sci. USA 85(16):5879-5883. A number of methods have been described to discern chemical structures for converting the naturally aggregated--but chemically separated--light and heavy polypeptide chains from an antibody V region into an sFv molecule which will fold into a three dimensional structure substantially similar to the structure of an antigen-binding site. See, *e.g.*, U.S. Pat. Nos. 5,091,513 and 5,132,405, to Huston et al.; and U.S. Pat. No. 4,946,778, to Ladner et al.

Each of the above-described molecules includes a heavy chain and a light chain CDR set, respectively interposed between a heavy chain and a light chain FR set which provide support to the CDRS and define the spatial relationship of the CDRs relative to each other. As used herein, the term "CDR set" refers to the three hypervariable regions of a heavy or light chain V region. Proceeding from the N-terminus of a heavy or light chain, these regions are denoted as "CDR1," "CDR2," and "CDR3" respectively. An antigen-binding site, therefore, includes six CDRs, comprising the CDR set from each of a heavy and a light chain V region. A polypeptide comprising a single CDR, (*e.g.*, a CDR1, CDR2 or CDR3) is referred to herein as a "molecular recognition unit." Crystallographic analysis of a number of antigen-antibody complexes has demonstrated that the amino acid residues of CDRs form extensive contact with bound antigen, wherein the most extensive antigen contact is with the heavy chain CDR3. Thus, the molecular recognition units are primarily responsible for the specificity of an antigen-binding site.

As used herein, the term "FR set" refers to the four flanking amino acid sequences which frame the CDRs of a CDR set of a heavy or light chain V region. Some FR residues may contact bound antigen; however, FRs are primarily responsible for folding the V region into the antigen-binding site, particularly the FR residues directly adjacent to the CDRS. Within FRs, certain amino residues and certain structural features are very highly conserved. In this regard, all V region sequences contain an internal disulfide loop of around 90 amino acid residues. When the V regions fold into a binding-site, the CDRs are displayed as projecting loop motifs which form an antigen-binding surface. It is generally recognized that there are conserved structural regions of FRs which influence the folded shape of the CDR loops into certain "canonical" structures--regardless of the precise CDR amino acid sequence. Further, certain FR residues are known to participate in non-covalent interdomain contacts which stabilize the interaction of the antibody heavy and light chains.

A number of "humanized" antibody molecules comprising an antigen-binding site derived from a non-human immunoglobulin have been described, including chimeric antibodies having rodent V regions and their associated CDRs fused to human constant domains (Winter et al. (1991) Nature 349:293-299; Lobuglio et al. (1989)

Proc. Nat. Acad. Sci. USA 86:4220-4224; Shaw et al. (1987) J Immunol. 138:4534-4538; and Brown et al. (1987) Cancer Res. 47:3577-3583), rodent CDRs grafted into a human supporting FR prior to fusion with an appropriate human antibody constant domain (Riechmann et al. (1988) Nature 332:323-327; Verhoeyen et al. (1988) Science 239:1534-1536; and Jones et al. (1986) Nature 321:522-525), and rodent CDRs supported by recombinantly veneered rodent FRs (European Patent Publication No. 519,596, published Dec. 23, 1992). These "humanized" molecules are designed to minimize unwanted immunological response toward rodent antihuman antibody molecules which limits the duration and effectiveness of therapeutic applications of those moieties in human recipients.

As used herein, the terms "veneered FRs" and "recombinantly veneered FRs" refer to the selective replacement of FR residues from, *e.g.*, a rodent heavy or light chain V region, with human FR residues in order to provide a xenogeneic molecule comprising an antigen-binding site which retains substantially all of the native FR polypeptide folding structure. Veneering techniques are based on the understanding that the ligand binding characteristics of an antigen-binding site are determined primarily by the structure and relative disposition of the heavy and light chain CDR sets within the antigen-binding surface. Davies et al. (1990) Ann. Rev. Biochem. 59:439-473. Thus, antigen binding specificity can be preserved in a humanized antibody only wherein the CDR structures, their interaction with each other, and their interaction with the rest of the V region domains are carefully maintained. By using veneering techniques, exterior (*e.g.*, solvent-accessible) FR residues which are readily encountered by the immune system are selectively replaced with human residues to provide a hybrid molecule that comprises either a weakly immunogenic, or substantially non-immunogenic veneered surface.

The process of veneering makes use of the available sequence data for human antibody variable domains compiled by Kabat et al., in Sequences of Proteins of Immunological Interest, 4th ed., (U.S. Dept. of Health and Human Services, U.S. Government Printing Office, 1987), updates to the Kabat database, and other accessible U.S. and foreign databases (both nucleic acid and protein). Solvent accessibilities of V region amino acids can be deduced from the known three-dimensional structure for

human and murine antibody fragments. There are two general steps in veneering a murine antigen-binding site. Initially, the FRs of the variable domains of an antibody molecule of interest are compared with corresponding FR sequences of human variable domains obtained from the above-identified sources. The most homologous human V regions are then compared residue by residue to corresponding murine amino acids. The residues in the murine FR which differ from the human counterpart are replaced by the residues present in the human moiety using recombinant techniques well known in the art. Residue switching is only carried out with moieties which are at least partially exposed (solvent accessible), and care is exercised in the replacement of amino acid residues which may have a significant effect on the tertiary structure of V region domains, such as proline, glycine and charged amino acids.

In this manner, the resultant "veneered" murine antigen-binding sites are thus designed to retain the murine CDR residues, the residues substantially adjacent to the CDRs, the residues identified as buried or mostly buried (solvent inaccessible), the residues believed to participate in non-covalent (*e.g.*, electrostatic and hydrophobic) contacts between heavy and light chain domains, and the residues from conserved structural regions of the FRs which are believed to influence the "canonical" tertiary structures of the CDR loops. These design criteria are then used to prepare recombinant nucleotide sequences which combine the CDRs of both the heavy and light chain of a murine antigen-binding site into human-appearing FRs that can be used to transfect mammalian cells for the expression of recombinant human antibodies which exhibit the antigen specificity of the murine antibody molecule.

In another embodiment of the invention, monoclonal antibodies of the present invention may be coupled to one or more therapeutic agents. Suitable agents in this regard include radionuclides, differentiation inducers, drugs, toxins, and derivatives thereof. Preferred radionuclides include $^{90}$Y, $^{123}$I, $^{125}$I, $^{131}$I, $^{186}$Re, $^{188}$Re, $^{211}$At, and $^{212}$Bi. Preferred drugs include methotrexate, and pyrimidine and purine analogs. Preferred differentiation inducers include phorbol esters and butyric acid. Preferred toxins include ricin, abrin, diptheria toxin, cholera toxin, gelonin, Pseudomonas exotoxin, Shigella toxin, and pokeweed antiviral protein.

A therapeutic agent may be coupled (*e.g.*, covalently bonded) to a suitable monoclonal antibody either directly or indirectly (*e.g.*, via a linker group). A direct reaction between an agent and an antibody is possible when each possesses a substituent capable of reacting with the other. For example, a nucleophilic group, such as an amino or sulfhydryl group, on one may be capable of reacting with a carbonyl-containing group, such as an anhydride or an acid halide, or with an alkyl group containing a good leaving group (*e.g.*, a halide) on the other.

Alternatively, it may be desirable to couple a therapeutic agent and an antibody via a linker group. A linker group can function as a spacer to distance an antibody from an agent in order to avoid interference with binding capabilities. A linker group can also serve to increase the chemical reactivity of a substituent on an agent or an antibody, and thus increase the coupling efficiency. An increase in chemical reactivity may also facilitate the use of agents, or functional groups on agents, which otherwise would not be possible.

It will be evident to those skilled in the art that a variety of bifunctional or polyfunctional reagents, both homo- and hetero-functional (such as those described in the catalog of the Pierce Chemical Co., Rockford, IL), may be employed as the linker group. Coupling may be effected, for example, through amino groups, carboxyl groups, sulfhydryl groups or oxidized carbohydrate residues. There are numerous references describing such methodology, *e.g.*, U.S. Patent No. 4,671,958, to Rodwell et al.

Where a therapeutic agent is more potent when free from the antibody portion of the immunoconjugates of the present invention, it may be desirable to use a linker group which is cleavable during or upon internalization into a cell. A number of different cleavable linker groups have been described. The mechanisms for the intracellular release of an agent from these linker groups include cleavage by reduction of a disulfide bond (*e.g.*, U.S. Patent No. 4,489,710, to Spitler), by irradiation of a photolabile bond (*e.g.*, U.S. Patent No. 4,625,014, to Senter et al.), by hydrolysis of derivatized amino acid side chains (*e.g.*, U.S. Patent No. 4,638,045, to Kohn et al.), by serum complement-mediated hydrolysis (*e.g.*, U.S. Patent No. 4,671,958, to Rodwell et al.), and acid-catalyzed hydrolysis (*e.g.*, U.S. Patent No. 4,569,789, to Blattler et al.).

It may be desirable to couple more than one agent to an antibody. In one embodiment, multiple molecules of an agent are coupled to one antibody molecule. In another embodiment, more than one type of agent may be coupled to one antibody. Regardless of the particular embodiment, immunoconjugates with more than one agent may be prepared in a variety of ways. For example, more than one agent may be coupled directly to an antibody molecule, or linkers that provide multiple sites for attachment can be used. Alternatively, a carrier can be used.

A carrier may bear the agents in a variety of ways, including covalent bonding either directly or via a linker group. Suitable carriers include proteins such as albumins (*e.g.*, U.S. Patent No. 4,507,234, to Kato et al.), peptides and polysaccharides such as aminodextran (*e.g.*, U.S. Patent No. 4,699,784, to Shih et al.). A carrier may also bear an agent by noncovalent bonding or by encapsulation, such as within a liposome vesicle (*e.g.*, U.S. Patent Nos. 4,429,008 and 4,873,088). Carriers specific for radionuclide agents include radiohalogenated small molecules and chelating compounds. For example, U.S. Patent No. 4,735,792 discloses representative radiohalogenated small molecules and their synthesis. A radionuclide chelate may be formed from chelating compounds that include those containing nitrogen and sulfur atoms as the donor atoms for binding the metal, or metal oxide, radionuclide. For example, U.S. Patent No. 4,673,562, to Davison et al. discloses representative chelating compounds and their synthesis.

<u>T Cell Compositions</u>

The present invention, in another aspect, provides T cells specific for a tumor polypeptide disclosed herein, or for a variant or derivative thereof. Such cells may generally be prepared *in vitro* or *ex vivo*, using standard procedures. For example, T cells may be isolated from bone marrow, peripheral blood, or a fraction of bone marrow or peripheral blood of a patient, using a commercially available cell separation system, such as the Isolex™ System, available from Nexell Therapeutics, Inc. (Irvine, CA; see also U.S. Patent No. 5,240,856; U.S. Patent No. 5,215,926; WO 89/06280; WO 91/16116 and WO 92/07243). Alternatively, T cells may be derived from related or unrelated humans, non-human mammals, cell lines or cultures.

T cells may be stimulated with a polypeptide, polynucleotide encoding a polypeptide and/or an antigen presenting cell (APC) that expresses such a polypeptide. Such stimulation is performed under conditions and for a time sufficient to permit the generation of T cells that are specific for the polypeptide of interest. Preferably, a tumor polypeptide or polynucleotide of the invention is present within a delivery vehicle, such as a microsphere, to facilitate the generation of specific T cells.

T cells are considered to be specific for a polypeptide of the present invention if the T cells specifically proliferate, secrete cytokines or kill target cells coated with the polypeptide or expressing a gene encoding the polypeptide. T cell specificity may be evaluated using any of a variety of standard techniques. For example, within a chromium release assay or proliferation assay, a stimulation index of more than two fold increase in lysis and/or proliferation, compared to negative controls, indicates T cell specificity. Such assays may be performed, for example, as described in Chen et al., *Cancer Res.* *54*:1065-1070, 1994. Alternatively, detection of the proliferation of T cells may be accomplished by a variety of known techniques. For example, T cell proliferation can be detected by measuring an increased rate of DNA synthesis (*e.g.*, by pulse-labeling cultures of T cells with tritiated thymidine and measuring the amount of tritiated thymidine incorporated into DNA). Contact with a tumor polypeptide (100 ng/ml - 100 μg/ml, preferably 200 ng/ml - 25 μg/ml) for 3 - 7 days will typically result in at least a two fold increase in proliferation of the T cells. Contact as described above for 2-3 hours should result in activation of the T cells, as measured using standard cytokine assays in which a two fold increase in the level of cytokine release (*e.g.*, TNF or IFN-γ) is indicative of T cell activation (*see* Coligan et al., Current Protocols in Immunology, vol. 1, Wiley Interscience (Greene 1998)). T cells that have been activated in response to a tumor polypeptide, polynucleotide or polypeptide-expressing APC may be $CD4^+$ and/or $CD8^+$. Tumor polypeptide-specific T cells may be expanded using standard techniques. Within preferred embodiments, the T cells are derived from a patient, a related donor or an unrelated donor, and are administered to the patient following stimulation and expansion.

For therapeutic purposes, $CD4^+$ or $CD8^+$ T cells that proliferate in response to a tumor polypeptide, polynucleotide or APC can be expanded in number

either *in vitro* or *in vivo*. Proliferation of such T cells *in vitro* may be accomplished in a variety of ways. For example, the T cells can be re-exposed to a tumor polypeptide, or a short peptide corresponding to an immunogenic portion of such a polypeptide, with or without the addition of T cell growth factors, such as interleukin-2, and/or stimulator cells that synthesize a tumor polypeptide. Alternatively, one or more T cells that proliferate in the presence of the tumor polypeptide can be expanded in number by cloning. Methods for cloning cells are well known in the art, and include limiting dilution.

<u>T Cell Receptor Compositions</u>

The T cell receptor (TCR) consists of 2 different, highly variable polypeptide chains, termed the T-cell receptor α and β chains, that are linked by a disulfide bond (Janeway, Travers, Walport. *Immunobiology*. Fourth Ed., 148-159. Elsevier Science Ltd/Garland Publishing. 1999). The α/β heterodimer complexes with the invariant CD3 chains at the cell membrane. This complex recognizes specific antigenic peptides bound to MHC molecules. The enormous diversity of TCR specificities is generated much like immunoglobulin diversity, through somatic gene rearrangement. The β chain genes contain over 50 variable (V), 2 diversity (D), over 10 joining (J) segments, and 2 constant region segments (C). The α chain genes contain over 70 V segments, and over 60 J segments but no D segments, as well as one C segment. During T cell development in the thymus, the D to J gene rearrangement of the β chain occurs, followed by the V gene segment rearrangement to the DJ. This functional $VDJ_\beta$ exon is transcribed and spliced to join to a $C_\beta$. For the α chain, a $V_\alpha$ gene segment rearranges to a $J_\alpha$ gene segment to create the functional exon that is then transcribed and spliced to the $C_\alpha$. Diversity is further increased during the recombination process by the random addition of P and N-nucleotides between the V, D, and J segments of the β chain and between the V and J segments in the α chain (Janeway, Travers, Walport. *Immunobiology*. Fourth Ed., 98 and 150. Elsevier Science Ltd/Garland Publishing. 1999).

The present invention, in another aspect, provides TCRs specific for a polypeptide disclosed herein, or for a variant or derivative thereof. In accordance with

the present invention, polynucleotide and amino acid sequences are provided for the V-J or V-D-J junctional regions or parts thereof for the alpha and beta chains of the T-cell receptor which recognize tumor polypeptides described herein. In general, this aspect of the invention relates to T-cell receptors which recognize or bind tumor polypeptides presented in the context of MHC. In a preferred embodiment the tumor antigens recognized by the T-cell receptors comprise a polypeptide of the present invention. For example, cDNA encoding a TCR specific for a colon tumor peptide can be isolated from T cells specific for a tumor polypeptide using standard molecular biological and recombinant DNA techniques.

This invention further includes the T-cell receptors or analogs thereof having substantially the same function or activity as the T-cell receptors of this invention which recognize or bind tumor polypeptides. Such receptors include, but are not limited to, a fragment of the receptor, or a substitution, addition or deletion mutant of a T-cell receptor provided herein. This invention also encompasses polypeptides or peptides that are substantially homologous to the T-cell receptors provided herein or that retain substantially the same activity. The term "analog" includes any protein or polypeptide having an amino acid residue sequence substantially identical to the T-cell receptors provided herein in which one or more residues, preferably no more than 5 residues, more preferably no more than 25 residues have been conservatively substituted with a functionally similar residue and which displays the functional aspects of the T-cell receptor as described herein.

The present invention further provides for suitable mammalian host cells, for example, non-specific T cells, that are transfected with a polynucleotide encoding TCRs specific for a polypeptide described herein, thereby rendering the host cell specific for the polypeptide. The $\alpha$ and $\beta$ chains of the TCR may be contained on separate expression vectors or alternatively, on a single expression vector that also contains an internal ribosome entry site (IRES) for cap-independent translation of the gene downstream of the IRES. Said host cells expressing TCRs specific for the polypeptide may be used, for example, for adoptive immunotherapy of colon cancer as discussed further below.

In further aspects of the present invention, cloned TCRs specific for a polypeptide recited herein may be used in a kit for the diagnosis of colon cancer. For example, the nucleic acid sequence or portions thereof, of tumor-specific TCRs can be used as probes or primers for the detection of expression of the rearranged genes encoding the specific TCR in a biological sample. Therefore, the present invention further provides for an assay for detecting messenger RNA or DNA encoding the TCR specific for a polypeptide.

Pharmaceutical Compositions

In additional embodiments, the present invention concerns formulation of one or more of the polynucleotide, polypeptide, T-cell, TCR, and/or antibody compositions disclosed herein in pharmaceutically-acceptable carriers for administration to a cell or an animal, either alone, or in combination with one or more other modalities of therapy.

It will be understood that, if desired, a composition as disclosed herein may be administered in combination with other agents as well, such as, *e.g.*, other proteins or polypeptides or various pharmaceutically-active agents. In fact, there is virtually no limit to other components that may also be included, given that the additional agents do not cause a significant adverse effect upon contact with the target cells or host tissues. The compositions may thus be delivered along with various other agents as required in the particular instance. Such compositions may be purified from host cells or other biological sources, or alternatively may be chemically synthesized as described herein. Likewise, such compositions may further comprise substituted or derivatized RNA or DNA compositions.

Therefore, in another aspect of the present invention, pharmaceutical compositions are provided comprising one or more of the polynucleotide, polypeptide, antibody, TCR, and/or T-cell compositions described herein in combination with a physiologically acceptable carrier. In certain preferred embodiments, the pharmaceutical compositions of the invention comprise immunogenic polynucleotide and/or polypeptide compositions of the invention for use in prophylactic and theraputic vaccine applications. Vaccine preparation is generally described in, for example, M.F.

Powell and M.J. Newman, eds., "Vaccine Design (the subunit and adjuvant approach)," Plenum Press (NY, 1995). Generally, such compositions will comprise one or more polynucleotide and/or polypeptide compositions of the present invention in combination with one or more immunostimulants.

It will be apparent that any of the pharmaceutical compositions described herein can contain pharmaceutically acceptable salts of the polynucleotides and polypeptides of the invention. Such salts can be prepared, for example, from pharmaceutically acceptable non-toxic bases, including organic bases (*e.g.*, salts of primary, secondary and tertiary amines and basic amino acids) and inorganic bases (*e.g.*, sodium, potassium, lithium, ammonium, calcium and magnesium salts).

In another embodiment, illustrative immunogenic compositions, *e.g.*, vaccine compositions, of the present invention comprise DNA encoding one or more of the polypeptides as described above, such that the polypeptide is generated *in situ*. As noted above, the polynucleotide may be administered within any of a variety of delivery systems known to those of ordinary skill in the art. Indeed, numerous gene delivery techniques are well known in the art, such as those described by Rolland, *Crit. Rev. Therap. Drug Carrier Systems 15*:143-198, 1998, and references cited therein. Appropriate polynucleotide expression systems will, of course, contain the necessary regulatory DNA regulatory sequences for expression in a patient (such as a suitable promoter and terminating signal). Alternatively, bacterial delivery systems may involve the administration of a bacterium (such as *Bacillus-Calmette-Guerrin*) that expresses an immunogenic portion of the polypeptide on its cell surface or secretes such an epitope.

Therefore, in certain embodiments, polynucleotides encoding immunogenic polypeptides described herein are introduced into suitable mammalian host cells for expression using any of a number of known viral-based systems. In one illustrative embodiment, retroviruses provide a convenient and effective platform for gene delivery systems. A selected nucleotide sequence encoding a polypeptide of the present invention can be inserted into a vector and packaged in retroviral particles using techniques known in the art. The recombinant virus can then be isolated and delivered to a subject. A number of illustrative retroviral systems have been described (*e.g.*, U.S. Pat. No. 5,219,740; Miller and Rosman (1989) BioTechniques 7:980-990; Miller, A. D.

(1990) Human Gene Therapy 1:5-14; Scarpa et al. (1991) Virology 180:849-852; Burns et al. (1993) Proc. Natl. Acad. Sci. USA 90:8033-8037; and Boris-Lawrie and Temin (1993) Cur. Opin. Genet. Develop. 3:102-109.

In addition, a number of illustrative adenovirus-based systems have also been described. Unlike retroviruses which integrate into the host genome, adenoviruses persist extrachromosomally thus minimizing the risks associated with insertional mutagenesis (Haj-Ahmad and Graham (1986) J. Virol. 57:267-274; Bett et al. (1993) J. Virol. 67:5911-5921; Mittereder et al. (1994) Human Gene Therapy 5:717-729; Seth et al. (1994) J. Virol. 68:933-940; Barr et al. (1994) Gene Therapy 1:51-58; Berkner, K. L. (1988) BioTechniques 6:616-629; and Rich et al. (1993) Human Gene Therapy 4:461-476).

Various adeno-associated virus (AAV) vector systems have also been developed for polynucleotide delivery. AAV vectors can be readily constructed using techniques well known in the art. See, *e.g.*, U.S. Pat. Nos. 5,173,414 and 5,139,941; International Publication Nos. WO 92/01070 and WO 93/03769; Lebkowski et al. (1988) Molec. Cell. Biol. 8:3988-3996; Vincent et al. (1990) Vaccines 90 (Cold Spring Harbor Laboratory Press); Carter, B. J. (1992) Current Opinion in Biotechnology 3:533-539; Muzyczka, N. (1992) Current Topics in Microbiol. and Immunol. 158:97-129; Kotin, R. M. (1994) Human Gene Therapy 5:793-801; Shelling and Smith (1994) Gene Therapy 1:165-169; and Zhou et al. (1994) J. Exp. Med. 179:1867-1875.

Additional viral vectors useful for delivering the polynucleotides encoding polypeptides of the present invention by gene transfer include those derived from the pox family of viruses, such as vaccinia virus and avian poxvirus. By way of example, vaccinia virus recombinants expressing the novel molecules can be constructed as follows. The DNA encoding a polypeptide is first inserted into an appropriate vector so that it is adjacent to a vaccinia promoter and flanking vaccinia DNA sequences, such as the sequence encoding thymidine kinase (TK). This vector is then used to transfect cells which are simultaneously infected with vaccinia. Homologous recombination serves to insert the vaccinia promoter plus the gene encoding the polypeptide of interest into the viral genome. The resulting TK.sup.(-)

recombinant can be selected by culturing the cells in the presence of 5-bromodeoxyuridine and picking viral plaques resistant thereto.

A vaccinia-based infection/transfection system can be conveniently used to provide for inducible, transient expression or coexpression of one or more polypeptides described herein in host cells of an organism. In this particular system, cells are first infected in vitro with a vaccinia virus recombinant that encodes the bacteriophage T7 RNA polymerase. This polymerase displays exquisite specificity in that it only transcribes templates bearing T7 promoters. Following infection, cells are transfected with the polynucleotide or polynucleotides of interest, driven by a T7 promoter. The polymerase expressed in the cytoplasm from the vaccinia virus recombinant transcribes the transfected DNA into RNA which is then translated into polypeptide by the host translational machinery. The method provides for high level, transient, cytoplasmic production of large quantities of RNA and its translation products. See, *e.g.*, Elroy-Stein and Moss, Proc. Natl. Acad. Sci. USA (1990) 87:6743-6747; Fuerst et al. Proc. Natl. Acad. Sci. USA (1986) 83:8122-8126.

Alternatively, avipoxviruses, such as the fowlpox and canarypox viruses, can also be used to deliver the coding sequences of interest. Recombinant avipox viruses, expressing immunogens from mammalian pathogens, are known to confer protective immunity when administered to non-avian species. The use of an Avipox vector is particularly desirable in human and other mammalian species since members of the Avipox genus can only productively replicate in susceptible avian species and therefore are not infective in mammalian cells. Methods for producing recombinant Avipoxviruses are known in the art and employ genetic recombination, as described above with respect to the production of vaccinia viruses. See, *e.g.*, WO 91/12882; WO 89/03429; and WO 92/03545.

Any of a number of alphavirus vectors can also be used for delivery of polynucleotide compositions of the present invention, such as those vectors described in U.S. Patent Nos. 5,843,723; 6,015,686; 6,008,035 and 6,015,694. Certain vectors based on Venezuelan Equine Encephalitis (VEE) can also be used, illustrative examples of which can be found in U.S. Patent Nos. 5,505,947 and 5,643,576.

Moreover, molecular conjugate vectors, such as the adenovirus chimeric vectors described in Michael et al. J. Biol. Chem. (1993) 268:6866-6869 and Wagner et al. Proc. Natl. Acad. Sci. USA (1992) 89:6099-6103, can also be used for gene delivery under the invention.

Additional illustrative information on these and other known viral-based delivery systems can be found, for example, in Fisher-Hoch et al., *Proc. Natl. Acad. Sci. USA 86*:317-321, 1989; Flexner et al., *Ann. N.Y. Acad. Sci. 569*:86-103, 1989; Flexner et al., *Vaccine 8*:17-21, 1990; U.S. Patent Nos. 4,603,112, 4,769,330, and 5,017,487; WO 89/01973; U.S. Patent No. 4,777,127; GB 2,200,651; EP 0,345,242; WO 91/02805; Berkner, *Biotechniques 6*:616-627, 1988; Rosenfeld et al., *Science 252*:431-434, 1991; Kolls et al., *Proc. Natl. Acad. Sci. USA 91*:215-219, 1994; Kass-Eisler et al., *Proc. Natl. Acad. Sci. USA 90*:11498-11502, 1993; Guzman et al., *Circulation 88*:2838-2848, 1993; and Guzman et al., *Cir. Res. 73*:1202-1207, 1993.

In certain embodiments, a polynucleotide may be integrated into the genome of a target cell. This integration may be in the specific location and orientation *via* homologous recombination (gene replacement) or it may be integrated in a random, non-specific location (gene augmentation). In yet further embodiments, the polynucleotide may be stably maintained in the cell as a separate, episomal segment of DNA. Such polynucleotide segments or "episomes" encode sequences sufficient to permit maintenance and replication independent of or in synchronization with the host cell cycle. The manner in which the expression construct is delivered to a cell and where in the cell the polynucleotide remains is dependent on the type of expression construct employed.

In another embodiment of the invention, a polynucleotide is administered/delivered as "naked" DNA, for example as described in Ulmer et al., *Science 259*:1745-1749, 1993 and reviewed by Cohen, *Science 259*:1691-1692, 1993. The uptake of naked DNA may be increased by coating the DNA onto biodegradable beads, which are efficiently transported into the cells.

In still another embodiment, a composition of the present invention can be delivered via a particle bombardment approach, many of which have been described. In one illustrative example, gas-driven particle acceleration can be achieved with

devices such as those manufactured by Powderject Pharmaceuticals PLC (Oxford, UK) and Powderject Vaccines Inc. (Madison, WI), some examples of which are described in U.S. Patent Nos. 5,846,796; 6,010,478; 5,865,796; 5,584,807; and EP Patent No. 0500 799. This approach offers a needle-free delivery approach wherein a dry powder formulation of microscopic particles, such as polynucleotide or polypeptide particles, are accelerated to high speed within a helium gas jet generated by a hand held device, propelling the particles into a target tissue of interest.

In a related embodiment, other devices and methods that may be useful for gas-driven needle-less injection of compositions of the present invention include those provided by Bioject, Inc. (Portland, OR), some examples of which are described in U.S. Patent Nos. 4,790,824; 5,064,413; 5,312,335; 5,383,851; 5,399,163; 5,520,639 and 5,993,412.

According to another embodiment, the pharmaceutical compositions described herein will comprise one or more immunostimulants in addition to the immunogenic polynucleotide, polypeptide, antibody, T-cell, TCR, and/or APC compositions of this invention. An immunostimulant refers to essentially any substance that enhances or potentiates an immune response (antibody and/or cell-mediated) to an exogenous antigen. One preferred type of immunostimulant comprises an adjuvant. Many adjuvants contain a substance designed to protect the antigen from rapid catabolism, such as aluminum hydroxide or mineral oil, and a stimulator of immune responses, such as lipid A, *Bortadella pertussis* or *Mycobacterium tuberculosis* derived proteins. Certain adjuvants are commercially available as, for example, Freund's Incomplete Adjuvant and Complete Adjuvant (Difco Laboratories, Detroit, MI); Merck Adjuvant 65 (Merck and Company, Inc., Rahway, NJ); AS-2 (SmithKline Beecham, Philadelphia, PA); aluminum salts such as aluminum hydroxide gel (alum) or aluminum phosphate; salts of calcium, iron or zinc; an insoluble suspension of acylated tyrosine; acylated sugars; cationically or anionically derivatized polysaccharides; polyphosphazenes; biodegradable microspheres; monophosphoryl lipid A and quil A. Cytokines, such as GM-CSF, interleukin-2, -7, -12, and other like growth factors, may also be used as adjuvants.

Within certain embodiments of the invention, the adjuvant composition is preferably one that induces an immune response predominantly of the Th1 type. High levels of Th1-type cytokines (*e.g.*, IFN-γ, TNFα, IL-2 and IL-12) tend to favor the induction of cell mediated immune responses to an administered antigen. In contrast, high levels of Th2-type cytokines (*e.g.*, IL-4, IL-5, IL-6 and IL-10) tend to favor the induction of humoral immune responses. Following application of a vaccine as provided herein, a patient will support an immune response that includes Th1- and Th2-type responses. Within a preferred embodiment, in which a response is predominantly Th1-type, the level of Th1-type cytokines will increase to a greater extent than the level of Th2-type cytokines. The levels of these cytokines may be readily assessed using standard assays. For a review of the families of cytokines, see Mosmann and Coffman, *Ann. Rev. Immunol.* 7:145-173, 1989.

Certain preferred adjuvants for eliciting a predominantly Th1-type response include, for example, a combination of monophosphoryl lipid A, preferably 3-de-O-acylated monophosphoryl lipid A, together with an aluminum salt. MPL® adjuvants are available from Corixa Corporation (Seattle, WA; *see*, for example, US Patent Nos. 4,436,727; 4,877,611; 4,866,034 and 4,912,094). CpG-containing oligonucleotides (in which the CpG dinucleotide is unmethylated) also induce a predominantly Th1 response. Such oligonucleotides are well known and are described, for example, in WO 96/02555, WO 99/33488 and U.S. Patent Nos. 6,008,200 and 5,856,462. Immunostimulatory DNA sequences are also described, for example, by Sato et al., *Science 273*:352, 1996. Another preferred adjuvant comprises a saponin, such as Quil A, or derivatives thereof, including QS21 and QS7 (Aquila Biopharmaceuticals Inc., Framingham, MA); Escin; Digitonin; or *Gypsophila* or *Chenopodium quinoa* saponins . Other preferred formulations include more than one saponin in the adjuvant combinations of the present invention, for example combinations of at least two of the following group comprising QS21, QS7, Quil A, β-escin, or digitonin.

Alternatively the saponin formulations may be combined with vaccine vehicles composed of chitosan or other polycationic polymers, polylactide and polylactide-co-glycolide particles, poly-N-acetyl glucosamine-based polymer matrix,

particles composed of polysaccharides or chemically modified polysaccharides, liposomes and lipid-based particles, particles composed of glycerol monoesters, etc. The saponins may also be formulated in the presence of cholesterol to form particulate structures such as liposomes or ISCOMs. Furthermore, the saponins may be formulated together with a polyoxyethylene ether or ester, in either a non-particulate solution or suspension, or in a particulate structure such as a paucilamelar liposome or ISCOM. The saponins may also be formulated with excipients such as Carbopol$^{R}$ to increase viscosity, or may be formulated in a dry powder form with a powder excipient such as lactose.

In one preferred embodiment, the adjuvant system includes the combination of a monophosphoryl lipid A and a saponin derivative, such as the combination of QS21 and 3D-MPL® adjuvant, as described in WO 94/00153, or a less reactogenic composition where the QS21 is quenched with cholesterol, as described in WO 96/33739. Other preferred formulations comprise an oil-in-water emulsion and tocopherol. Another particularly preferred adjuvant formulation employing QS21, 3D-MPL® adjuvant and tocopherol in an oil-in-water emulsion is described in WO 95/17210.

Another enhanced adjuvant system involves the combination of a CpG-containing oligonucleotide and a saponin derivative particularly the combination of CpG and QS21 is disclosed in WO 00/09159. Preferably the formulation additionally comprises an oil in water emulsion and tocopherol.

Additional illustrative adjuvants for use in the pharmaceutical compositions of the invention include Montanide ISA 720 (Seppic, France), SAF (Chiron, California, United States), ISCOMS (CSL), MF-59 (Chiron), the SBAS series of adjuvants (*e.g.*, SBAS-2 or SBAS-4, available from SmithKline Beecham, Rixensart, Belgium), Detox (Enhanzyn®) (Corixa, Hamilton, MT), RC-529 (Corixa, Hamilton, MT) and other aminoalkyl glucosaminide 4-phosphates (AGPs), such as those described in pending U.S. Patent Application Serial Nos. 08/853,826 and 09/074,720, the disclosures of which are incorporated herein by reference in their entireties, and polyoxyethylene ether adjuvants such as those described in WO 99/52549A1.

Other preferred adjuvants include adjuvant molecules of the general formula

(I): $HO(CH_2CH_2O)_n\text{-}A\text{-}R$,

wherein, n is 1-50, A is a bond or –C(O)-, R is $C_{1-50}$ alkyl or Phenyl $C_{1-50}$ alkyl.

One embodiment of the present invention consists of a vaccine formulation comprising a polyoxyethylene ether of general formula (I), wherein $n$ is between 1 and 50, preferably 4-24, most preferably 9; the $R$ component is $C_{1-50}$, preferably $C_4$-$C_{20}$ alkyl and most preferably $C_{12}$ alkyl, and $A$ is a bond. The concentration of the polyoxyethylene ethers should be in the range 0.1-20%, preferably from 0.1-10%, and most preferably in the range 0.1-1%. Preferred polyoxyethylene ethers are selected from the following group: polyoxyethylene-9-lauryl ether, polyoxyethylene-9-steoryl ether, polyoxyethylene-8-steoryl ether, polyoxyethylene-4-lauryl ether, polyoxyethylene-35-lauryl ether, and polyoxyethylene-23-lauryl ether. Polyoxyethylene ethers such as polyoxyethylene lauryl ether are described in the Merck index (12th edition: entry 7717). These adjuvant molecules are described in WO 99/52549.

The polyoxyethylene ether according to the general formula (I) above may, if desired, be combined with another adjuvant. For example, a preferred adjuvant combination is preferably with CpG as described in the pending UK patent application GB 9820956.2.

According to another embodiment of this invention, an immunogenic composition described herein is delivered to a host via antigen presenting cells (APCs), such as dendritic cells, macrophages, B cells, monocytes and other cells that may be engineered to be efficient APCs. Such cells may, but need not, be genetically modified to increase the capacity for presenting the antigen, to improve activation and/or maintenance of the T cell response, to have anti-tumor effects *per se* and/or to be immunologically compatible with the receiver (*i.e.*, matched HLA haplotype). APCs may generally be isolated from any of a variety of biological fluids and organs, including tumor and peritumoral tissues, and may be autologous, allogeneic, syngeneic or xenogeneic cells.

Certain preferred embodiments of the present invention use dendritic cells or progenitors thereof as antigen-presenting cells. Dendritic cells are highly potent APCs (Banchereau and Steinman, *Nature 392*:245-251, 1998) and have been shown to be effective as a physiological adjuvant for eliciting prophylactic or therapeutic antitumor immunity (*see* Timmerman and Levy, *Ann. Rev. Med. 50*:507-529, 1999). In general, dendritic cells may be identified based on their typical shape (stellate *in situ*, with marked cytoplasmic processes (dendrites) visible *in vitro*), their ability to take up, process and present antigens with high efficiency and their ability to activate naïve T cell responses. Dendritic cells may, of course, be engineered to express specific cell-surface receptors or ligands that are not commonly found on dendritic cells *in vivo* or *ex vivo*, and such modified dendritic cells are contemplated by the present invention. As an alternative to dendritic cells, secreted vesicles antigen-loaded dendritic cells (called exosomes) may be used within a vaccine (*see* Zitvogel et al., *Nature Med. 4*:594-600, 1998).

Dendritic cells and progenitors may be obtained from peripheral blood, bone marrow, tumor-infiltrating cells, peritumoral tissues-infiltrating cells, lymph nodes, spleen, skin, umbilical cord blood or any other suitable tissue or fluid. For example, dendritic cells may be differentiated *ex vivo* by adding a combination of cytokines such as GM-CSF, IL-4, IL-13 and/or TNFα to cultures of monocytes harvested from peripheral blood. Alternatively, CD34 positive cells harvested from peripheral blood, umbilical cord blood or bone marrow may be differentiated into dendritic cells by adding to the culture medium combinations of GM-CSF, IL-3, TNFα, CD40 ligand, LPS, flt3 ligand and/or other compound(s) that induce differentiation, maturation and proliferation of dendritic cells.

Dendritic cells are conveniently categorized as "immature" and "mature" cells, which allows a simple way to discriminate between two well characterized phenotypes. However, this nomenclature should not be construed to exclude all possible intermediate stages of differentiation. Immature dendritic cells are characterized as APC with a high capacity for antigen uptake and processing, which correlates with the high expression of Fcγ receptor and mannose receptor. The mature phenotype is typically characterized by a lower expression of these markers, but a high

expression of cell surface molecules responsible for T cell activation such as class I and class II MHC, adhesion molecules (*e.g.*, CD54 and CD11) and costimulatory molecules (*e.g.*, CD40, CD80, CD86 and 4-1BB).

APCs may generally be transfected with a polynucleotide of the invention (or portion or other variant thereof) such that the encoded polypeptide, or an immunogenic portion thereof, is expressed on the cell surface. Such transfection may take place *ex vivo*, and a pharmaceutical composition comprising such transfected cells may then be used for therapeutic purposes, as described herein. Alternatively, a gene delivery vehicle that targets a dendritic or other antigen presenting cell may be administered to a patient, resulting in transfection that occurs *in vivo*. *In vivo* and *ex vivo* transfection of dendritic cells, for example, may generally be performed using any methods known in the art, such as those described in WO 97/24447, or the gene gun approach described by Mahvi et al., *Immunology and cell Biology* 75:456-460, 1997. Antigen loading of dendritic cells may be achieved by incubating dendritic cells or progenitor cells with the tumor polypeptide, DNA (naked or within a plasmid vector) or RNA; or with antigen-expressing recombinant bacterium or viruses (*e.g.*, vaccinia, fowlpox, adenovirus or lentivirus vectors). Prior to loading, the polypeptide may be covalently conjugated to an immunological partner that provides T cell help (*e.g.*, a carrier molecule). Alternatively, a dendritic cell may be pulsed with a non-conjugated immunological partner, separately or in the presence of the polypeptide.

While any suitable carrier known to those of ordinary skill in the art may be employed in the pharmaceutical compositions of this invention, the type of carrier will typically vary depending on the mode of administration. Compositions of the present invention may be formulated for any appropriate manner of administration, including for example, topical, oral, nasal, mucosal, intravenous, intracranial, intraperitoneal, subcutaneous and intramuscular administration.

Carriers for use within such pharmaceutical compositions are biocompatible, and may also be biodegradable. In certain embodiments, the formulation preferably provides a relatively constant level of active component release. In other embodiments, however, a more rapid rate of release immediately upon administration may be desired. The formulation of such compositions is well within the

level of ordinary skill in the art using known techniques. Illustrative carriers useful in this regard include microparticles of poly(lactide-co-glycolide), polyacrylate, latex, starch, cellulose, dextran and the like. Other illustrative delayed-release carriers include supramolecular biovectors, which comprise a non-liquid hydrophilic core (*e.g.*, a cross-linked polysaccharide or oligosaccharide) and, optionally, an external layer comprising an amphiphilic compound, such as a phospholipid (*see e.g.*, U.S. Patent No. 5,151,254 and PCT applications WO 94/20078, WO/94/23701 and WO 96/06638). The amount of active compound contained within a sustained release formulation depends upon the site of implantation, the rate and expected duration of release and the nature of the condition to be treated or prevented.

In another illustrative embodiment, biodegradable microspheres (*e.g.*, polylactate polyglycolate) are employed as carriers for the compositions of this invention. Suitable biodegradable microspheres are disclosed, for example, in U.S. Patent Nos. 4,897,268; 5,075,109; 5,928,647; 5,811,128; 5,820,883; 5,853,763; 5,814,344, 5,407,609 and 5,942,252. Modified hepatitis B core protein carrier systems. such as described in WO/99 40934, and references cited therein, will also be useful for many applications. Another illustrative carrier/delivery system employs a carrier comprising particulate-protein complexes, such as those described in U.S. Patent No. 5,928,647, which are capable of inducing a class I-restricted cytotoxic T lymphocyte responses in a host.

In another illustrative embodiment, calcium phosphate core particles are employed as carriers, vaccine adjuvants, or as controlled release matrices for the compositions of this invention. Exemplary calcium phosphate particles are disclosed, for example, in published patent application No. WO/0046147.

The pharmaceutical compositions of the invention will often further comprise one or more buffers (*e.g.*, neutral buffered saline or phosphate buffered saline), carbohydrates (*e.g.*, glucose, mannose, sucrose or dextrans), mannitol, proteins, polypeptides or amino acids such as glycine, antioxidants, bacteriostats, chelating agents such as EDTA or glutathione, adjuvants (*e.g.*, aluminum hydroxide), solutes that render the formulation isotonic, hypotonic or weakly hypertonic with the blood of a

recipient, suspending agents, thickening agents and/or preservatives. Alternatively, compositions of the present invention may be formulated as a lyophilizate.

The pharmaceutical compositions described herein may be presented in unit-dose or multi-dose containers, such as sealed ampoules or vials. Such containers are typically sealed in such a way to preserve the sterility and stability of the formulation until use. In general, formulations may be stored as suspensions, solutions or emulsions in oily or aqueous vehicles. Alternatively, a pharmaceutical composition may be stored in a freeze-dried condition requiring only the addition of a sterile liquid carrier immediately prior to use.

The development of suitable dosing and treatment regimens for using the particular compositions described herein in a variety of treatment regimens, including *e.g.*, oral, parenteral, intravenous, intranasal, and intramuscular administration and formulation, is well known in the art, some of which are briefly discussed below for general purposes of illustration.

In certain applications, the pharmaceutical compositions disclosed herein may be delivered *via* oral administration to an animal. As such, these compositions may be formulated with an inert diluent or with an assimilable edible carrier, or they may be enclosed in hard- or soft-shell gelatin capsule, or they may be compressed into tablets, or they may be incorporated directly with the food of the diet.

The active compounds may even be incorporated with excipients and used in the form of ingestible tablets, buccal tables, troches, capsules, elixirs, suspensions, syrups, wafers, and the like (see, for example, Mathiowitz *et al.*, Nature 1997 Mar 27;386(6623):410-4; Hwang *et al.*, Crit Rev Ther Drug Carrier Syst 1998;15(3):243-84; U. S. Patent 5,641,515; U. S. Patent 5,580,579 and U. S. Patent 5,792,451). Tablets, troches, pills, capsules and the like may also contain any of a variety of additional components, for example, a binder, such as gum tragacanth, acacia, cornstarch, or gelatin; excipients, such as dicalcium phosphate; a disintegrating agent, such as corn starch, potato starch, alginic acid and the like; a lubricant, such as magnesium stearate; and a sweetening agent, such as sucrose, lactose or saccharin may be added or a flavoring agent, such as peppermint, oil of wintergreen, or cherry flavoring. When the dosage unit form is a capsule, it may contain, in addition to

materials of the above type, a liquid carrier. Various other materials may be present as coatings or to otherwise modify the physical form of the dosage unit. For instance, tablets, pills, or capsules may be coated with shellac, sugar, or both. Of course, any material used in preparing any dosage unit form should be pharmaceutically pure and substantially non-toxic in the amounts employed. In addition, the active compounds may be incorporated into sustained-release preparation and formulations.

Typically, these formulations will contain at least about 0.1% of the active compound or more, although the percentage of the active ingredient(s) may, of course, be varied and may conveniently be between about 1 or 2% and about 60% or 70% or more of the weight or volume of the total formulation. Naturally, the amount of active compound(s) in each therapeutically useful composition may be prepared is such a way that a suitable dosage will be obtained in any given unit dose of the compound. Factors such as solubility, bioavailability, biological half-life, route of administration, product shelf life, as well as other pharmacological considerations will be contemplated by one skilled in the art of preparing such pharmaceutical formulations, and as such, a variety of dosages and treatment regimens may be desirable.

For oral administration the compositions of the present invention may alternatively be incorporated with one or more excipients in the form of a mouthwash, dentifrice, buccal tablet, oral spray, or sublingual orally-administered formulation. Alternatively, the active ingredient may be incorporated into an oral solution such as one containing sodium borate, glycerin and potassium bicarbonate, or dispersed in a dentifrice, or added in a therapeutically-effective amount to a composition that may include water, binders, abrasives, flavoring agents, foaming agents, and humectants. Alternatively the compositions may be fashioned into a tablet or solution form that may be placed under the tongue or otherwise dissolved in the mouth.

In certain circumstances it will be desirable to deliver the pharmaceutical compositions disclosed herein parenterally, intravenously, intramuscularly, or even intraperitoneally. Such approaches are well known to the skilled artisan, some of which are further described, for example, in U. S. Patent 5,543,158; U. S. Patent 5,641,515 and U. S. Patent 5,399,363. In certain embodiments, solutions of the active compounds as free base or pharmacologically acceptable salts may be prepared in water suitably

mixed with a surfactant, such as hydroxypropylcellulose. Dispersions may also be prepared in glycerol, liquid polyethylene glycols, and mixtures thereof and in oils. Under ordinary conditions of storage and use, these preparations generally will contain a preservative to prevent the growth of microorganisms.

Illustrative pharmaceutical forms suitable for injectable use include sterile aqueous solutions or dispersions and sterile powders for the extemporaneous preparation of sterile injectable solutions or dispersions (for example, see U. S. Patent 5,466,468). In all cases the form must be sterile and must be fluid to the extent that easy syringability exists. It must be stable under the conditions of manufacture and storage and must be preserved against the contaminating action of microorganisms, such as bacteria and fungi. The carrier can be a solvent or dispersion medium containing, for example, water, ethanol, polyol (*e.g.*, glycerol, propylene glycol, and liquid polyethylene glycol, and the like), suitable mixtures thereof, and/or vegetable oils. Proper fluidity may be maintained, for example, by the use of a coating, such as lecithin, by the maintenance of the required particle size in the case of dispersion and/or by the use of surfactants. The prevention of the action of microorganisms can be facilitated by various antibacterial and antifungal agents, for example, parabens, chlorobutanol, phenol, sorbic acid, thimerosal, and the like. In many cases, it will be preferable to include isotonic agents, for example, sugars or sodium chloride. Prolonged absorption of the injectable compositions can be brought about by the use in the compositions of agents delaying absorption, for example, aluminum monostearate and gelatin.

In one embodiment, for parenteral administration in an aqueous solution, the solution should be suitably buffered if necessary and the liquid diluent first rendered isotonic with sufficient saline or glucose. These particular aqueous solutions are especially suitable for intravenous, intramuscular, subcutaneous and intraperitoneal administration. In this connection, a sterile aqueous medium that can be employed will be known to those of skill in the art in light of the present disclosure. For example, one dosage may be dissolved in 1 ml of isotonic NaCl solution and either added to 1000 ml of hypodermoclysis fluid or injected at the proposed site of infusion, (see for example, "Remington's Pharmaceutical Sciences" 15th Edition, pages 1035-1038 and 1570-

1580). Some variation in dosage will necessarily occur depending on the condition of the subject being treated. Moreover, for human administration, preparations will of course preferably meet sterility, pyrogenicity, and the general safety and purity standards as required by FDA Office of Biologics standards.

In another embodiment of the invention, the compositions disclosed herein may be formulated in a neutral or salt form. Illustrative pharmaceutically-acceptable salts include the acid addition salts (formed with the free amino groups of the protein) and which are formed with inorganic acids such as, for example, hydrochloric or phosphoric acids, or such organic acids as acetic, oxalic, tartaric, mandelic, and the like. Salts formed with the free carboxyl groups can also be derived from inorganic bases such as, for example, sodium, potassium, ammonium, calcium, or ferric hydroxides, and such organic bases as isopropylamine, trimethylamine, histidine, procaine and the like. Upon formulation, solutions will be administered in a manner compatible with the dosage formulation and in such amount as is therapeutically effective.

The carriers can further comprise any and all solvents, dispersion media, vehicles, coatings, diluents, antibacterial and antifungal agents, isotonic and absorption delaying agents, buffers, carrier solutions, suspensions, colloids, and the like. The use of such media and agents for pharmaceutical active substances is well known in the art. Except insofar as any conventional media or agent is incompatible with the active ingredient, its use in the therapeutic compositions is contemplated. Supplementary active ingredients can also be incorporated into the compositions. The phrase "pharmaceutically-acceptable" refers to molecular entities and compositions that do not produce an allergic or similar untoward reaction when administered to a human.

In certain embodiments, the pharmaceutical compositions may be delivered by intranasal sprays, inhalation, and/or other aerosol delivery vehicles. Methods for delivering genes, nucleic acids, and peptide compositions directly to the lungs *via* nasal aerosol sprays has been described, *e.g.*, in U. S. Patent 5,756,353 and U. S. Patent 5,804,212. Likewise, the delivery of drugs using intranasal microparticle resins (Takenaga *et al.*, J Controlled Release 1998 Mar 2;52(1-2):81-7) and lysophosphatidyl-glycerol compounds (U. S. Patent 5,725,871) are also well-known in

the pharmaceutical arts. Likewise, illustrative transmucosal drug delivery in the form of a polytetrafluoroetheylene support matrix is described in U. S. Patent 5,780,045.

In certain embodiments, liposomes, nanocapsules, microparticles, lipid particles, vesicles, and the like, are used for the introduction of the compositions of the present invention into suitable host cells/organisms. In particular, the compositions of the present invention may be formulated for delivery either encapsulated in a lipid particle, a liposome, a vesicle, a nanosphere, or a nanoparticle or the like. Alternatively, compositions of the present invention can be bound, either covalently or non-covalently, to the surface of such carrier vehicles.

The formation and use of liposome and liposome-like preparations as potential drug carriers is generally known to those of skill in the art (see for example, Lasic, Trends Biotechnol 1998 Jul;16(7):307-21; Takakura, Nippon Rinsho 1998 Mar;56(3):691-5; Chandran *et al.*, Indian J Exp Biol. 1997 Aug;35(8):801-9; Margalit, Crit Rev Ther Drug Carrier Syst. 1995;12(2-3):233-61; U.S. Patent 5,567,434; U.S. Patent 5,552,157; U.S. Patent 5,565,213; U.S. Patent 5,738,868 and U.S. Patent 5,795,587, each specifically incorporated herein by reference in its entirety).

Liposomes have been used successfully with a number of cell types that are normally difficult to transfect by other procedures, including T cell suspensions, primary hepatocyte cultures and PC 12 cells (Renneisen *et al.*, J Biol Chem. 1990 Sep 25;265(27):16337-42; Muller *et al.*, DNA Cell Biol. 1990 Apr;9(3):221-9). In addition, liposomes are free of the DNA length constraints that are typical of viral-based delivery systems. Liposomes have been used effectively to introduce genes, various drugs, radiotherapeutic agents, enzymes, viruses, transcription factors, allosteric effectors and the like, into a variety of cultured cell lines and animals. Furthermore, he use of liposomes does not appear to be associated with autoimmune responses or unacceptable toxicity after systemic delivery.

In certain embodiments, liposomes are formed from phospholipids that are dispersed in an aqueous medium and spontaneously form multilamellar concentric bilayer vesicles (also termed multilamellar vesicles (MLVs).

Alternatively, in other embodiments, the invention provides for pharmaceutically-acceptable nanocapsule formulations of the compositions of the

present invention. Nanocapsules can generally entrap compounds in a stable and reproducible way (see, for example, Quintanar-Guerrero *et al.*, Drug Dev Ind Pharm. 1998 Dec;24(12):1113-28). To avoid side effects due to intracellular polymeric overloading, such ultrafine particles (sized around 0.1 μm) may be designed using polymers able to be degraded *in vivo*. Such particles can be made as described, for example, by Couvreur *et al.*, Crit Rev Ther Drug Carrier Syst. 1988;5(1):1-20; zur Muhlen *et al.*, Eur J Pharm Biopharm. 1998 Mar;45(2):149-55; Zambaux *et al.* J Controlled Release. 1998 Jan 2;50(1-3):31-40; and U. S. Patent 5,145,684.

Cancer Therapeutic Methods

Immunologic approaches to cancer therapy are based on the recognition that cancer cells can often evade the body's defenses against aberrant or foreign cells and molecules, and that these defenses might be therapeutically stimulated to regain the lost ground, *e.g.* pgs. 623-648 in Klein, Immunology (Wiley-Interscience, New York, 1982). Numerous recent observations that various immune effectors can directly or indirectly inhibit growth of tumors has led to renewed interest in this approach to cancer therapy, *e.g.* Jager, et al., Oncology 2001;60(1):1-7; Renner, et al., Ann Hematol 2000 Dec;79(12):651-9.

Four-basic cell types whose function has been associated with antitumor cell immunity and the elimination of tumor cells from the body are: i) B-lymphocytes which secrete immunoglobulins into the blood plasma for identifying and labeling the nonself invader cells; ii) monocytes which secrete the complement proteins that are responsible for lysing and processing the immunoglobulin-coated target invader cells; iii) natural killer lymphocytes having two mechanisms for the destruction of tumor cells, antibody-dependent cellular cytotoxicity and natural killing; and iv) T-lymphocytes possessing antigen-specific receptors and having the capacity to recognize a tumor cell carrying complementary marker molecules (Schreiber, H., 1989, in Fundamental Immunology (ed). W. E. Paul, pp. 923-955).

Cancer immunotherapy generally focuses on inducing humoral immune responses, cellular immune responses, or both. Moreover, it is well established that induction of $CD4^+$ T helper cells is necessary in order to secondarily induce either

antibodies or cytotoxic $CD8^+$ T cells. Polypeptide antigens that are selective or ideally specific for cancer cells, particularly colon cancer cells, offer a powerful approach for inducing immune responses against colon cancer, and are an important aspect of the present invention.

Therefore, in further aspects of the present invention, the pharmaceutical compositions described herein may be used to stimulate an immune response against cancer, particularly for the immunotherapy of colon cancer. Within such methods, the pharmaceutical compositions described herein are administered to a patient, typically a warm-blooded animal, preferably a human. A patient may or may not be afflicted with cancer. Pharmaceutical compositions and vaccines may be administered either prior to or following surgical removal of primary tumors and/or treatment such as administration of radiotherapy or conventional chemotherapeutic drugs. As discussed above, administration of the pharmaceutical compositions may be by any suitable method, including administration by intravenous, intraperitoneal, intramuscular, subcutaneous, intranasal, intradermal, anal, vaginal, topical and oral routes.

Within certain embodiments, immunotherapy may be active immunotherapy, in which treatment relies on the *in vivo* stimulation of the endogenous host immune system to react against tumors with the administration of immune response-modifying agents (such as polypeptides and polynucleotides as provided herein).

Within other embodiments, immunotherapy may be passive immunotherapy, in which treatment involves the delivery of agents with established tumor-immune reactivity (such as effector cells or antibodies) that can directly or indirectly mediate antitumor effects and does not necessarily depend on an intact host immune system. Examples of effector cells include T cells as discussed above, T lymphocytes (such as $CD8^+$ cytotoxic T lymphocytes and $CD4^+$ T-helper tumor-infiltrating lymphocytes), killer cells (such as Natural Killer cells and lymphokine-activated killer cells), B cells and antigen-presenting cells (such as dendritic cells and macrophages) expressing a polypeptide provided herein. T cell receptors and antibody receptors specific for the polypeptides recited herein may be cloned, expressed and transferred into other vectors or effector cells for adoptive immunotherapy. The

polypeptides provided herein may also be used to generate antibodies or anti-idiotypic antibodies (as described above and in U.S. Patent No. 4,918,164) for passive immunotherapy.

Monoclonal antibodies may be labeled with any of a variety of labels for desired selective usages in detection, diagnostic assays or therapeutic applications (as described in U.S. Patent Nos. 6,090,365; 6,015,542; 5,843,398; 5,595,721; and 4,708,930, hereby incorporated by reference in their entirety as if each was incorporated individually). In each case, the binding of the labelled monoclonal antibody to the determinant site of the antigen will signal detection or delivery of a particular therapeutic agent to the antigenic determinant on the non-normal cell. A further object of this invention is to provide the specific monoclonal antibody suitably labelled for achieving such desired selective usages thereof.

Effector cells may generally be obtained in sufficient quantities for adoptive immunotherapy by growth *in vitro*, as described herein. Culture conditions for expanding single antigen-specific effector cells to several billion in number with retention of antigen recognition *in vivo* are well known in the art. Such *in vitro* culture conditions typically use intermittent stimulation with antigen, often in the presence of cytokines (such as IL-2) and non-dividing feeder cells. As noted above, immunoreactive polypeptides as provided herein may be used to rapidly expand antigen-specific T cell cultures in order to generate a sufficient number of cells for immunotherapy. In particular, antigen-presenting cells, such as dendritic, macrophage, monocyte, fibroblast and/or B cells, may be pulsed with immunoreactive polypeptides or transfected with one or more polynucleotides using standard techniques well known in the art. For example, antigen-presenting cells can be transfected with a polynucleotide having a promoter appropriate for increasing expression in a recombinant virus or other expression system. Cultured effector cells for use in therapy must be able to grow and distribute widely, and to survive long term *in vivo*. Studies have shown that cultured effector cells can be induced to grow in vivo and to survive long term in substantial numbers by repeated stimulation with antigen supplemented with IL-2 (*see*, for example, Cheever et al., *Immunological Reviews 157*:177, 1997).

Alternatively, a vector expressing a polypeptide recited herein may be introduced into antigen presenting cells taken from a patient and clonally propagated *ex vivo* for transplant back into the same patient. Transfected cells may be reintroduced into the patient using any means known in the art, preferably in sterile form by intravenous, intracavitary, intraperitoneal or intratumor administration.

Routes and frequency of administration of the therapeutic compositions described herein, as well as dosage, will vary from individual to individual, and may be readily established using standard techniques. In general, the pharmaceutical compositions and vaccines may be administered by injection (*e.g.*, intracutaneous, intramuscular, intravenous or subcutaneous), intranasally (*e.g.*, by aspiration) or orally. Preferably, between 1 and 10 doses may be administered over a 52 week period. Preferably, 6 doses are administered, at intervals of 1 month, and booster vaccinations may be given periodically thereafter. Alternate protocols may be appropriate for individual patients. A suitable dose is an amount of a compound that, when administered as described above, is capable of promoting an anti-tumor immune response, and is at least 10-50% above the basal (*i.e.*, untreated) level. Such response can be monitored by measuring the anti-tumor antibodies in a patient or by vaccine-dependent generation of cytolytic effector cells capable of killing the patient's tumor cells *in vitro*. Such vaccines should also be capable of causing an immune response that leads to an improved clinical outcome (*e.g.*, more frequent remissions, complete or partial or longer disease-free survival) in vaccinated patients as compared to non-vaccinated patients. In general, for pharmaceutical compositions and vaccines comprising one or more polypeptides, the amount of each polypeptide present in a dose ranges from about 25 μg to 5 mg per kg of host. Suitable dose sizes will vary with the size of the patient, but will typically range from about 0.1 mL to about 5 mL.

In general, an appropriate dosage and treatment regimen provides the active compound(s) in an amount sufficient to provide therapeutic and/or prophylactic benefit. Such a response can be monitored by establishing an improved clinical outcome (*e.g.*, more frequent remissions, complete or partial, or longer disease-free survival) in treated patients as compared to non-treated patients. Increases in preexisting immune responses to a tumor protein generally correlate with an improved

clinical outcome. Such immune responses may generally be evaluated using standard proliferation, cytotoxicity or cytokine assays, which may be performed using samples obtained from a patient before and after treatment.

Cancer Detection and Diagnostic Compositions, Methods and Kits

In general, a cancer may be detected in a patient based on the presence of one or more colon tumor proteins and/or polynucleotides encoding such proteins in a biological sample (for example, blood, sera, sputum urine and/or tumor biopsies) obtained from the patient. In other words, such proteins may be used as markers to indicate the presence or absence of a cancer such as colon cancer. In addition, such proteins may be useful for the detection of other cancers. The binding agents provided herein generally permit detection of the level of antigen that binds to the agent in the biological sample.

Polynucleotide primers and probes may be used to detect the level of mRNA encoding a tumor protein, which is also indicative of the presence or absence of a cancer. In general, a tumor sequence should be present at a level that is at least two-fold, preferably three-fold, and more preferably five-fold or higher in tumor tissue than in normal tissue of the same type from which the tumor arose. Expression levels of a particular tumor sequence in tissue types different from that in which the tumor arose are irrelevant in certain diagnostic embodiments since the presence of tumor cells can be confirmed by observation of predetermined differential expression levels, e.g., 2-fold, 5-fold, etc, in tumor tissue to expression levels in normal tissue of the same type.

Other differential expression patterns can be utilized advantageously for diagnostic purposes. For example, in one aspect of the invention, overexpression of a tumor sequence in tumor tissue and normal tissue of the same type, but not in other normal tissue types, *e.g.* PBMCs, can be exploited diagnostically. In this case, the presence of metastatic tumor cells, for example in a sample taken from the circulation or some other tissue site different from that in which the tumor arose, can be identified and/or confirmed by detecting expression of the tumor sequence in the sample, for example using RT-PCR analysis. In many instances, it will be desired to enrich for

tumor cells in the sample of interest, e.g., PBMCs, using cell capture or other like techniques.

There are a variety of assay formats known to those of ordinary skill in the art for using a binding agent to detect polypeptide markers in a sample. *See, e.g.*, Harlow and Lane, *Antibodies: A Laboratory Manual,* Cold Spring Harbor Laboratory, 1988. In general, the presence or absence of a cancer in a patient may be determined by (a) contacting a biological sample obtained from a patient with a binding agent; (b) detecting in the sample a level of polypeptide that binds to the binding agent; and (c) comparing the level of polypeptide with a predetermined cut-off value.

In a preferred embodiment, the assay involves the use of binding agent immobilized on a solid support to bind to and remove the polypeptide from the remainder of the sample. The bound polypeptide may then be detected using a detection reagent that contains a reporter group and specifically binds to the binding agent/polypeptide complex. Such detection reagents may comprise, for example, a binding agent that specifically binds to the polypeptide or an antibody or other agent that specifically binds to the binding agent, such as an anti-immunoglobulin, protein G, protein A or a lectin. Alternatively, a competitive assay may be utilized, in which a polypeptide is labeled with a reporter group and allowed to bind to the immobilized binding agent after incubation of the binding agent with the sample. The extent to which components of the sample inhibit the binding of the labeled polypeptide to the binding agent is indicative of the reactivity of the sample with the immobilized binding agent. Suitable polypeptides for use within such assays include full length colon tumor proteins and polypeptide portions thereof to which the binding agent binds, as described above.

The solid support may be any material known to those of ordinary skill in the art to which the tumor protein may be attached. For example, the solid support may be a test well in a microtiter plate or a nitrocellulose or other suitable membrane. Alternatively, the support may be a bead or disc, such as glass, fiberglass, latex or a plastic material such as polystyrene or polyvinylchloride. The support may also be a magnetic particle or a fiber optic sensor, such as those disclosed, for example, in U.S. Patent No. 5,359,681. The binding agent may be immobilized on the solid support

using a variety of techniques known to those of skill in the art, which are amply described in the patent and scientific literature. In the context of the present invention, the term "immobilization" refers to both noncovalent association, such as adsorption, and covalent attachment (which may be a direct linkage between the agent and functional groups on the support or may be a linkage by way of a cross-linking agent). Immobilization by adsorption to a well in a microtiter plate or to a membrane is preferred. In such cases, adsorption may be achieved by contacting the binding agent, in a suitable buffer, with the solid support for a suitable amount of time. The contact time varies with temperature, but is typically between about 1 hour and about 1 day. In general, contacting a well of a plastic microtiter plate (such as polystyrene or polyvinylchloride) with an amount of binding agent ranging from about 10 ng to about 10 µg, and preferably about 100 ng to about 1 µg, is sufficient to immobilize an adequate amount of binding agent.

Covalent attachment of binding agent to a solid support may generally be achieved by first reacting the support with a bifunctional reagent that will react with both the support and a functional group, such as a hydroxyl or amino group, on the binding agent. For example, the binding agent may be covalently attached to supports having an appropriate polymer coating using benzoquinone or by condensation of an aldehyde group on the support with an amine and an active hydrogen on the binding partner (*see*, *e.g.*, Pierce Immunotechnology Catalog and Handbook, 1991, at A12-A13).

In certain embodiments, the assay is a two-antibody sandwich assay. This assay may be performed by first contacting an antibody that has been immobilized on a solid support, commonly the well of a microtiter plate, with the sample, such that polypeptides within the sample are allowed to bind to the immobilized antibody. Unbound sample is then removed from the immobilized polypeptide-antibody complexes and a detection reagent (preferably a second antibody capable of binding to a different site on the polypeptide) containing a reporter group is added. The amount of detection reagent that remains bound to the solid support is then determined using a method appropriate for the specific reporter group.

More specifically, once the antibody is immobilized on the support as described above, the remaining protein binding sites on the support are typically blocked. Any suitable blocking agent known to those of ordinary skill in the art, such as bovine serum albumin or Tween 20™ (Sigma Chemical Co., St. Louis, MO). The immobilized antibody is then incubated with the sample, and polypeptide is allowed to bind to the antibody. The sample may be diluted with a suitable diluent, such as phosphate-buffered saline (PBS) prior to incubation. In general, an appropriate contact time (*i.e.*, incubation time) is a period of time that is sufficient to detect the presence of polypeptide within a sample obtained from an individual with colon cancer at least about 95% of that achieved at equilibrium between bound and unbound polypeptide. Those of ordinary skill in the art will recognize that the time necessary to achieve equilibrium may be readily determined by assaying the level of binding that occurs over a period of time. At room temperature, an incubation time of about 30 minutes is generally sufficient.

Unbound sample may then be removed by washing the solid support with an appropriate buffer, such as PBS containing 0.1% Tween 20™. The second antibody, which contains a reporter group, may then be added to the solid support. Preferred reporter groups include those groups recited above.

The detection reagent is then incubated with the immobilized antibody-polypeptide complex for an amount of time sufficient to detect the bound polypeptide. An appropriate amount of time may generally be determined by assaying the level of binding that occurs over a period of time. Unbound detection reagent is then removed and bound detection reagent is detected using the reporter group. The method employed for detecting the reporter group depends upon the nature of the reporter group. For radioactive groups, scintillation counting or autoradiographic methods are generally appropriate. Spectroscopic methods may be used to detect dyes, luminescent groups and fluorescent groups. Biotin may be detected using avidin, coupled to a different reporter group (commonly a radioactive or fluorescent group or an enzyme). Enzyme reporter groups may generally be detected by the addition of substrate (generally for a specific period of time), followed by spectroscopic or other analysis of the reaction products.

To determine the presence or absence of a cancer, such as colon cancer, the signal detected from the reporter group that remains bound to the solid support is generally compared to a signal that corresponds to a predetermined cut-off value. In one preferred embodiment, the cut-off value for the detection of a cancer is the average mean signal obtained when the immobilized antibody is incubated with samples from patients without the cancer. In general, a sample generating a signal that is three standard deviations above the predetermined cut-off value is considered positive for the cancer. In an alternate preferred embodiment, the cut-off value is determined using a Receiver Operator Curve, according to the method of Sackett et al., *Clinical Epidemiology: A Basic Science for Clinical Medicine*, Little Brown and Co., 1985, p. 106-7. Briefly, in this embodiment, the cut-off value may be determined from a plot of pairs of true positive rates (*i.e.*, sensitivity) and false positive rates (100%-specificity) that correspond to each possible cut-off value for the diagnostic test result. The cut-off value on the plot that is the closest to the upper left-hand corner (*i.e.*, the value that encloses the largest area) is the most accurate cut-off value, and a sample generating a signal that is higher than the cut-off value determined by this method may be considered positive. Alternatively, the cut-off value may be shifted to the left along the plot, to minimize the false positive rate, or to the right, to minimize the false negative rate. In general, a sample generating a signal that is higher than the cut-off value determined by this method is considered positive for a cancer.

In a related embodiment, the assay is performed in a flow-through or strip test format, wherein the binding agent is immobilized on a membrane, such as nitrocellulose. In the flow-through test, polypeptides within the sample bind to the immobilized binding agent as the sample passes through the membrane. A second, labeled binding agent then binds to the binding agent-polypeptide complex as a solution containing the second binding agent flows through the membrane. The detection of bound second binding agent may then be performed as described above. In the strip test format, one end of the membrane to which binding agent is bound is immersed in a solution containing the sample. The sample migrates along the membrane through a region containing second binding agent and to the area of immobilized binding agent. Concentration of second binding agent at the area of immobilized antibody indicates the

presence of a cancer. Typically, the concentration of second binding agent at that site generates a pattern, such as a line, that can be read visually. The absence of such a pattern indicates a negative result. In general, the amount of binding agent immobilized on the membrane is selected to generate a visually discernible pattern when the biological sample contains a level of polypeptide that would be sufficient to generate a positive signal in the two-antibody sandwich assay, in the format discussed above. Preferred binding agents for use in such assays are antibodies and antigen-binding fragments thereof. Preferably, the amount of antibody immobilized on the membrane ranges from about 25 ng to about 1μg, and more preferably from about 50 ng to about 500 ng. Such tests can typically be performed with a very small amount of biological sample.

Of course, numerous other assay protocols exist that are suitable for use with the tumor proteins or binding agents of the present invention. The above descriptions are intended to be exemplary only. For example, it will be apparent to those of ordinary skill in the art that the above protocols may be readily modified to use tumor polypeptides to detect antibodies that bind to such polypeptides in a biological sample. The detection of such tumor protein specific antibodies may correlate with the presence of a cancer.

A cancer may also, or alternatively, be detected based on the presence of T cells that specifically react with a tumor protein in a biological sample. Within certain methods, a biological sample comprising $CD4^+$ and/or $CD8^+$ T cells isolated from a patient is incubated with a tumor polypeptide, a polynucleotide encoding such a polypeptide and/or an APC that expresses at least an immunogenic portion of such a polypeptide, and the presence or absence of specific activation of the T cells is detected. Suitable biological samples include, but are not limited to, isolated T cells. For example, T cells may be isolated from a patient by routine techniques (such as by Ficoll/Hypaque density gradient centrifugation of peripheral blood lymphocytes). T cells may be incubated *in vitro* for 2-9 days (typically 4 days) at 37°C with polypeptide (*e.g.*, 5 - 25 μg/ml). It may be desirable to incubate another aliquot of a T cell sample in the absence of tumor polypeptide to serve as a control. For $CD4^+$ T cells, activation is preferably detected by evaluating proliferation of the T cells. For $CD8^+$ T cells,

activation is preferably detected by evaluating cytolytic activity. A level of proliferation that is at least two fold greater and/or a level of cytolytic activity that is at least 20% greater than in disease-free patients indicates the presence of a cancer in the patient.

As noted above, a cancer may also, or alternatively, be detected based on the level of mRNA encoding a tumor protein in a biological sample. For example, at least two oligonucleotide primers may be employed in a polymerase chain reaction (PCR) based assay to amplify a portion of a tumor cDNA derived from a biological sample, wherein at least one of the oligonucleotide primers is specific for (*i.e.*, hybridizes to) a polynucleotide encoding the tumor protein. The amplified cDNA is then separated and detected using techniques well known in the art, such as gel electrophoresis.

Similarly, oligonucleotide probes that specifically hybridize to a polynucleotide encoding a tumor protein may be used in a hybridization assay to detect the presence of polynucleotide encoding the tumor protein in a biological sample.

To permit hybridization under assay conditions, oligonucleotide primers and probes should comprise an oligonucleotide sequence that has at least about 60%, preferably at least about 75% and more preferably at least about 90%, identity to a portion of a polynucleotide encoding a tumor protein of the invention that is at least 10 nucleotides, and preferably at least 20 nucleotides, in length. Preferably, oligonucleotide primers and/or probes hybridize to a polynucleotide encoding a polypeptide described herein under moderately stringent conditions, as defined above. Oligonucleotide primers and/or probes which may be usefully employed in the diagnostic methods described herein preferably are at least 10-40 nucleotides in length. In a preferred embodiment, the oligonucleotide primers comprise at least 10 contiguous nucleotides, more preferably at least 15 contiguous nucleotides, of a DNA molecule having a sequence as disclosed herein. Techniques for both PCR based assays and hybridization assays are well known in the art (*see*, for example, Mullis et al., *Cold Spring Harbor Symp. Quant. Biol.*, *51*:263, 1987; Erlich ed., *PCR Technology*, Stockton Press, NY, 1989).

One preferred assay employs RT-PCR, in which PCR is applied in conjunction with reverse transcription. Typically, RNA is extracted from a biological

sample, such as biopsy tissue, and is reverse transcribed to produce cDNA molecules. PCR amplification using at least one specific primer generates a cDNA molecule, which may be separated and visualized using, for example, gel electrophoresis. Amplification may be performed on biological samples taken from a test patient and from an individual who is not afflicted with a cancer. The amplification reaction may be performed on several dilutions of cDNA spanning two orders of magnitude. A two-fold or greater increase in expression in several dilutions of the test patient sample as compared to the same dilutions of the non-cancerous sample is typically considered positive.

In another aspect of the present invention, cell capture technologies may be used in conjunction, with, for example, real-time PCR to provide a more sensitive tool for detection of metastatic cells expressing colon tumor antigens. Detection of colon cancer cells in biological samples, e.g., bone marrow samples, peripheral blood, and small needle aspiration samples is desirable for diagnosis and prognosis in colon cancer patients.

Immunomagnetic beads coated with specific monoclonal antibodies to surface cell markers, or tetrameric antibody complexes, may be used to first enrich or positively select cancer cells in a sample. Various commercially available kits may be used, including Dynabeads® Epithelial Enrich (Dynal Biotech, Oslo, Norway), StemSep™ (StemCell Technologies, Inc., Vancouver, BC), and RosetteSep (StemCell Technologies). A skilled artisan will recognize that other methodologies and kits may also be used to enrich or positively select desired cell populations. Dynabeads® Epithelial Enrich contains magnetic beads coated with mAbs specific for two glycoprotein membrane antigens expressed on normal and neoplastic epithelial tissues. The coated beads may be added to a sample and the sample then applied to a magnet, thereby capturing the cells bound to the beads. The unwanted cells are washed away and the magnetically isolated cells eluted from the beads and used in further analyses.

RosetteSep can be used to enrich cells directly from a blood sample and consists of a cocktail of tetrameric antibodies that targets a variety of unwanted cells and crosslinks them to glycophorin A on red blood cells (RBC) present in the sample, forming rosettes. When centrifuged over Ficoll, targeted cells pellet along with the free

RBC. The combination of antibodies in the depletion cocktail determines which cells will be removed and consequently which cells will be recovered. Antibodies that are available include, but are not limited to: CD2, CD3, CD4, CD5, CD8, CD10, CD11b, CD14, CD15, CD16, CD19, CD20, CD24, CD25, CD29, CD33, CD34, CD36, CD38, CD41, CD45, CD45RA, CD45RO, CD56, CD66B, CD66e, HLA-DR, IgE, and TCRαβ.

Additionally, it is contemplated in the present invention that mAbs specific for colon tumor antigens can be generated and used in a similar manner. For example, mAbs that bind to tumor-specific cell surface antigens may be conjugated to magnetic beads, or formulated in a tetrameric antibody complex, and used to enrich or positively select metastatic colon tumor cells from a sample. Once a sample is enriched or positively selected, cells may be lysed and RNA isolated. RNA may then be subjected to RT-PCR analysis using colon tumor-specific primers in a real-time PCR assay as described herein. One skilled in the art will recognize that enriched or selected populations of cells may be analyzed by other methods (*e.g. in situ* hybridization or flow cytometry).

In another embodiment, the compositions described herein may be used as markers for the progression of cancer. In this embodiment, assays as described above for the diagnosis of a cancer may be performed over time, and the change in the level of reactive polypeptide(s) or polynucleotide(s) evaluated. For example, the assays may be performed every 24-72 hours for a period of 6 months to 1 year, and thereafter performed as needed. In general, a cancer is progressing in those patients in whom the level of polypeptide or polynucleotide detected increases over time. In contrast, the cancer is not progressing when the level of reactive polypeptide or polynucleotide either remains constant or decreases with time.

Certain *in vivo* diagnostic assays may be performed directly on a tumor. One such assay involves contacting tumor cells with a binding agent. The bound binding agent may then be detected directly or indirectly via a reporter group. Such binding agents may also be used in histological applications. Alternatively, polynucleotide probes may be used within such applications.

As noted above, to improve sensitivity, multiple tumor protein markers may be assayed within a given sample. It will be apparent that binding agents specific

for different proteins provided herein may be combined within a single assay. Further, multiple primers or probes may be used concurrently. The selection of tumor protein markers may be based on routine experiments to determine combinations that results in optimal sensitivity. In addition, or alternatively, assays for tumor proteins provided herein may be combined with assays for other known tumor antigens.

The present invention further provides kits for use within any of the above diagnostic methods. Such kits typically comprise two or more components necessary for performing a diagnostic assay. Components may be compounds, reagents, containers and/or equipment. For example, one container within a kit may contain a monoclonal antibody or fragment thereof that specifically binds to a tumor protein. Such antibodies or fragments may be provided attached to a support material, as described above. One or more additional containers may enclose elements, such as reagents or buffers, to be used in the assay. Such kits may also, or alternatively, contain a detection reagent as described above that contains a reporter group suitable for direct or indirect detection of antibody binding.

Alternatively, a kit may be designed to detect the level of mRNA encoding a tumor protein in a biological sample. Such kits generally comprise at least one oligonucleotide probe or primer, as described above, that hybridizes to a polynucleotide encoding a tumor protein. Such an oligonucleotide may be used, for example, within a PCR or hybridization assay. Additional components that may be present within such kits include a second oligonucleotide and/or a diagnostic reagent or container to facilitate the detection of a polynucleotide encoding a tumor protein.

The following Examples are offered by way of illustration and not by way of limitation.

## EXAMPLES

### EXAMPLE 1

### IDENTIFICATION OF COLON TUMOR PROTEIN cDNAS

This Example illustrates the identification of cDNA molecules encoding colon tumor proteins.

A colon tumor cell line cDNA library was constructed using the Life Technologies SUPERSCRIPT PLASMID SYSTEM™ for cDNA synthesis and plasmid cloning. Briefly, mRNA was isolated from colon tumor cell line 391-12 total RNA (853A) and used as the template for cDNA synthesis. EcoR I/Not I adapters from Life Technologies and EcoR I/Not I-cut pZEro-2™ vector were substituted for components provided with the kit. The library was electroporated into Life Technologies ElectroMAX™ DH10B cells and amplified in liquid culture. 24 clones plated prior to liquid amplification were randomly selected for individual amplification. Turbo miniprep DNA was prepared from each clone and characterized by sequencing and database analysis. The sequences are disclosed herein as SEQ ID NO:1-14.

A colon tumor cell line subtracted library was generated by conventional, biotin-streptavidin subtraction. Briefly, 10 μg of plasmid DNA from the colon tumor cell line 391-12 library (754-1) was subtracted against 100 μg biotinylated driver [25% normal colon library, 25% normal liver and salivary gland library, and 50% pooled driver library (liver, pancreas, skin, bone marrow, resting PBMC, stomach, and whole brain)]. Two biotin-streptavidin subtractions were performed, one after an overnight hybridization and one after a 2-hour hybridization. CDNA remaining after the two subtractions was ligated into a Not I-cut pcDNA3.1(+) vector, electroporated into ElectroMAX™ DH10B cells, and grown on agar plates containing ampicillin. Clones were randomly selected for individual amplification. Turbo miniprep DNA was prepared from each clone and characterized by sequencing and database analysis. This subtraction generated a library representing genes that are over-expressed or exclusively expressed in colon tumor cell line CT391-12. These cDNA sequences are disclosed herein as SEQ ID NO:15-65.

The database analysis of the disclosed sequences revealed that the following sequences showed no significant similarity to sequences in public databases: SEQ ID NO:6, 8, 15, 16, 38, 39, 53, 54 and 65. The remaining sequences showed some degree of similarity to GenBank nucleotide sequences, as shown in Table 2.

**Table 2**

| SEQ ID NO: | GenBank Nucleotide Database Search Results |
|---|---|
| 17 | Homo sapiens barrier-to-autointegration factor mRNA, complete cds |
| 18 | Homo sapiens ATP synthase, H+ transporting, mitochondrial 50 complex, subunit c (subunit 9), isoform 2 (ATP5G2) mRNA |
| 19, 20 | Human histone (H2A.Z) mRNA, complete cds |
| 21, 22 | Human mRNA for elongation factor-1-beta |
| 23 | Homo sapiens mRNA for transcription factor BTF 3 |
| 24 | Homo sapiens KRT8 mRNA for keratin 8 |
| 25 | Homo sapiens ribosomal protein S2 (RPS2) mRNA |
| 26 | Homo sapiens ribosomal protein L11 mRNA, complete cds |
| 27, 28 | Human cyclin protein gene, complete cds |
| 29 | Human ferritin H chain mRNA, complete cds |
| 30, 31 | Human mRNA for lactate dehydrogenase B (LDH-B) |
| 32 | Homo sapiens ribosomal protein S6 (RPS6) mRNA |
| 33 | Human mRNA for elongation factor 1 alpha subunit (EF-1 alpha) |
| 34, 35 | Homo sapiens GTP binding protein mRNA, complete cds |
| 36 | Homo sapiens 12p12-31.7-37.2 BAC RP11-80N2 (Roswell Park Cancer Institute HumanBAC Library) complete sequence |
| 37 | Homo sapiens CDC28 protein kinase 1 (CKS1) mRNA |
| 40 | Human ribosomal protein L29 (humrpl29) mRNA, complete cds |
| 41 | Homo sapiens mRNA; cDNA DKFZp586O1224 |
| 42 | RAN, member RAS oncogene family Homo sapiens RAN, member RAS oncogene family (RAN), mRNA |
| 43, 44 | Human DNA sequence from clone RP3-322L4 on chromosome 6, complete sequence |
| 45 | Human mitochondrial genome (cytochrome oxidase subunit II hits) |
| 46 | Homo sapiens eukoryotic translation elongation factor 1 gamma (EEFIG) mRNA |
| 47 | Homo sapiens ribosomal protein L15 (RPL15) mRNA |
| 48, 49 | Human 28S ribosomal RNA gene, complete cds |
| 50 | Homo sapiens repressor of estrogen receptor activity (REA) mRNA, complete cds |
| 51, 52 | Homo sapiens guanine nucleotide binding protein (G protein), beta polypeptide 2-like 1 (GNB2L1), mRNA |
| 55 | Homo sapiens ribosomal protein S4, X-linked (RPS4X) mRNA |
| 56 | thymosin beta-10 [human, metastatic melanoma cell line, mRNA, 453nt] |
| 57 | Human thymosin beta-4 mRNA, complete cds |
| 58 | Homo sapiens U6 snRNA-associated Sm-like protein (LSM4), mRNA |
| 59 | Homo sapiens heterogenous nuclear ribonucleoprotein A1 (HNRPA1) mRNA |

| SEQ ID NO: | GenBank Nucleotide Database Search Results |
|---|---|
| 60 | Homo sapiens clone RP11-182J23 from 7p14-15, complete sequence |
| 61 | Human L23 mRNA for putative ribosomal protein |
| 62 | Homo sapiens hCPE-R mRNA for CPE-receptor, complete cds |
| 63 | Human somatic cytochrome c (HS7) processed pseudogene, complete cds |
| 64 | Homo sapiens HSPC198 mRNA, complete cds |

Search results for additional sequences are shown in Table 3.

**Table 3**

| SEQ ID NO: | | GenBank Nucleotide Database Search Results |
|---|---|---|
| 1 | 54262 | Human glyceraldehyde-3-phosphate dehydrogenase mRNA, complete cds |
| 2 | 54264 | Homo sapiens Chromosome 22q11.2 Cosmid Clone 2h In DGCR Region, complete sequence |
| 3 | 54266 | Human mitochondrial genome (cytochrome oxidase subunit II hits) |
| 4 | 54269 | Human mitochondrial genome |
| 5 | 54270 | Homo sapiens glycine cleavage system protein H (aminomethyl carrier) (GCSH) mRNA |
| 7 | 54272 | Homo sapiens cDNA FLJ11202 fis, clone PLACE1007746 |
| 9 | 54274 | Homo sapiens chaperonin containing TCP1, subunit 2 (beta) (CCT2) mRNA |
| 10 | 54278 | Homo sapiens lymphotoxin beta receptor (TNFR superfamily, member 3 (LTBR), mRNA |
| 11 | 54280 | Homo sapiens pyruvate dehydrogenase kinase isoenzyme 1 (PDK1) mRNA, complete cds |
| 12 | 54283 | Homo sapiens aspargine synthetase (ASNS) mRNA |
| 13 | 54284 | Homo sapiens mRNA for KIAA1393 protein, partial cds |
| 14 | 54285 | Homo sapiens mRNA for staufen protein, partial |

## EXAMPLE 2

### ADDITIONAL cDNA SEQUENCES FROM COLON TUMOR CELL SUBTRACTED LIBRARY

1248 clones from the 391-12 colon tumor cell line subtracted library (754-1) were subjected to DNA sequence analysis by standard methodology. The cDNA sequences of 730 of those clones are disclosed herein as SEQ ID NO:66-795.

## EXAMPLE 3

### IDENTIFICATION OF ADDITIONAL COLON TUMOR PROTEIN cDNAS FROM A SUBTRACTED SEROLOGICAL EXPRESSION LIBRARY

A mammalian serological expression cloning system using COS-7 cells and subtracted libraries was developed to identify cDNAs overexpressed in colon tumors. Studies were performed essentially as follows: rabbit serum was generated against the membrane fraction of a colon tumor cell line and absorbed with normal human mammary epithelial cell (HMEC) lysate to remove non-specific reactivity. Colon tumor line 391-12 (CTL 391-12) cells and COS-7 cells were stained with the absorbed serum and analyzed by flow cytometry to determine if specific staining could be observed for the colon tumor line. Once specific staining was obtained, COS-7 cells were transfected with the colon tumor line subtraction 1 (CTLS1) library, generated as described in Example 1. COS-7 cells expressing antigen were isolated by selection over a magnetic column following primary staining with CTL 391-12 rabbit serum and secondary staining with magnetic bead-conjugated goat anti-rabbit IgG. Hirt DNA was isolated from the positive cells and transformed into *E. coli*. Plasmid DNA was purified and re-transfected into COS-7 cells for another round of selection. The selection process was repeated four times to isolate cDNAs that are specific for colon tumor cells. Individual cDNA clones were isolated from the third and fourth rounds of selection and analyzed by sequencing. Following is a detailed description of the protocol used to isolate cDNAs from this expression library.

**Membrane and antisera generation:**

Membrane preparations were adapted from: Marshak, *et al.* "Strategies for Protein Purification and Characterization—A Lab Course Manual" Cold Spring Harbor Press 1996 pp 284-285. Briefly, $10^9$ colon tumor 391-12 cells grown in X-vivo 15 media plus 1% rabbit sera were harvested and resuspended in 5 ml of 250 mM sucrose (Sigma, St. Louis), 10 mM HEPES pH=7.4 (Sigma), 1 mM EDTA (Sigma) and 1 COMPLETE Protease inhibitor tablet (Roche Biochemicals). The suspension was lysed by 15 strokes in a Dounce homogenizer and spun down at 800 x *g* to remove

organelles, and finally the membranes were harvested by ultracentrifugation at 100,000 x *g* for 30 minutes. The pellet was resuspended in water and total protein (5-10 mg) was determined for this fraction. Two rabbits were immunized with this preparation in MPL adjuvant (1:1 [vol:vol] three times at monthly intervals) and immune serum was harvested post-second and third boost. Both sera were tested at a dilution of 1:500 against colon membranes and showed a strong positive signal. Freeze-thaw cell lysate was generated from 1.5 x $10^8$ cells of a human mammary epithelial cell (HMEC) line. Ten ml of rabbit antisera was absorbed with this lysate (~10 mg protein). The following experiments used absorbed antisera.

**Flow Cytometry:**

COS-7 and colon tumor line 391-12 (CTL391-12) cells were harvested and incubated in staining buffer (5% FBS/0.1% sodium azide/1X PBS) with or without primary antibody for 30 minutes on ice. Approximately 500,000 cells were used per 50 µl staining. Cells were washed twice with staining buffer and resuspended in staining buffer containing 0.02 µg/µl fluorescein-conjugated goat anti-rabbit IgG $F(ab')_2$ antibody (Rockland). Cells were incubated another 30 minutes on ice, washed twice with staining buffer, and resuspended in 350 µl staining buffer with 2 µg/ml propidium iodide to stain dead cells. For each sample, data was collected from 10,000 live cells on a Becton-Dickenson FACSCalibur using CellQuest software. Flow cytometry revealed that colon tumor cells show specific staining with antiserum to colon tumor cell line membrane fraction.

**Magnetic Selection:**

*Transfection and Staining:* COS-7 cells in 100 mm plates (Falcon 3003) were transfected with colon tumor cell line subtraction 1 (CTLS1) plasmid DNA using FuGENE™ 6 Transfection Reagent (RocheBiochemicals). After 40-48 hours, transfected cells were harvested by incubation with 1 ml Cell Dissociation Solution (Sigma) for 5-10 minutes at 37°C. Detached cells were washed once with staining buffer (5% FBS/0.1% sodium azide/1X PBS), pelleted at 300 x g, and resuspended at a concentration of $10^7$ cells/ml in staining buffer with 1:2000 rabbit anti-colon tumor line (391-12) membrane fraction absorbed with HMEC lysate (lot#3095L, 4-20-00). Cells were incubated 30 minutes on ice, washed twice with MACS buffer (0.5% bovine

serum albumin/2 mM EDTA/1X PBS), and resuspended at a concentration of $10^7$ cells per 80 µl MACS buffer. Added 20 µl goat anti-rabbit IgG microbeads (Miltenyi Biotech #486-02) was added per $10^7$ cells and incubated for 30 minutes on ice.

*MACS Separation:* Stained cells were washed twice with MACS buffer and resuspended in 0.5 ml MACS buffer per MS+ positive selection column or 1 ml MACS buffer per LS selection column used (reagents from Miltenyi Biotec, Auburn, CA). A Filcons 130-33S filter was placed over each MS+ or LS column, and filters and columns were equilibrated with 500 µl (MS+) or 3 ml (LS) chilled MACS buffer. Resuspended cells were applied to each column through the filters, and the columns were washed with 3 x 500 µl (MS+) or 3 x 3 ml (LS) chilled MACS buffer. Positive cells were eluted from each column by a forceful flush of 2 x 1 ml (MS+) or 1 x 5 ml (LS) room temperature MACS buffer. Negative cells from the flow-through were pelleted and subjected to a second round of MACS separation.

*Hirt DNA:* Positive COS-7 cells were pooled and pelleted. Pellets were resuspended in 1-2 ml 0.6% SDS/10 mM EDTA and transferred to 1.5-ml microfuge tubes in 1 ml aliquots to lyse for 20 minutes at room temperature. 250 µl 5 M NaCl was added to each microfuge tube, samples were mixed well by inverting, and tubes were chilled in packed ice overnight. Precipitate was removed by centrifugation at >17,500 x *g* for 10 minutes at 4 °C. Supernatants were transferred to fresh tubes in aliquots of 500-600 µl and extracted twice with 25:24:1 phenol:chloroform:isoamyl alcohol. DNA in each tube was precipitated with 5 µg glycogen, 0.1 x volume 3 M sodium acetate, and 0.7 x volume 100% isopropanol, and centrifugation at >17,500 x *g* for 30 minutes at 4 °C. Precipitated DNA was washed once with 70% ethanol and resuspended in a total of 5 µl (1st and 2nd Hirt DNA) or 10 µl (3rd and 4th Hirt DNA) sterile water.

*Transformation:* 5 µl of resuspended Hirt DNA was electroporated into 100 µl ElectroMAX DH10B *E. coli* cells (Invitrogen™ Life Technologies). Bacteria transformed with 1st and 2nd Hirt DNA were grown overnight under antibiotic selection in 500 ml media, and plasmid DNA was isolated from 100 ml culture with a Plasmid Maxi Kit (QIAGEN). Bacteria transformed with 3rd and 4th Hirt DNA were plated out and grown overnight under antibiotic selection. Colonies were subsequently scraped off the plates and grown overnight under antibiotic selection in 500 ml media, and plasmid

DNA was isolated from 100 ml culture with a Plasmid Maxi Kit (QIAGEN). Individual clones from the 3rd and 4th rounds of selection were sequenced (SEQ ID NO: 796-934) and searched against Genbank. Those sequences showing some degree of similarity with sequences in Genbank are listed in Table 4. Those showing no significant similarity to sequences in Genbank are lsited in Table 5.

TABLE 4: COLON TUMOR PROTEIN cDNAS FROM A SUBTRACTED SEROLOGICAL EXPRESSION LIBRARY SHOWING SOME DEGREE OF SIMILARITY TO SEQUENCES IN GENBANK.

| SEQ ID NO | Clone ID | 5' | 3' | GenbankID | Genbank Search Results |
|---|---|---|---|---|---|
| 796 | 74209 | | .2 | 12006349 | Homo sapiens 60S ribosomal protein L15 (EC45) mRNA, complete cds |
| 798 | 74211 | .1 | | 12728616 | Homo sapiens thymosin, beta 10 (TMSB10), mRNA |
| 799 | 74212 | .1 | | 13278917 | Homo sapiens, eukaryotic translation elongation factor 1 gamma, clone MGC:4501, mRNA, complete cds |
| 800 | 74213 | .1 | | 13273228 | Homo sapiens mitochondrion, complete genome |
| 801 | 74214 | .1 | | 12804026 | Homo sapiens, ribosomal protein S7, clone MGC:10268, mRNA, complete cds |
| 802 | 74215 | .1 | | 11136902 | Human DNA sequence from clone RP11-183M13 on chromosome 1, complete sequence [Homo sapiens] |
| 803 | 74216 | .1 | | 337384 | Human 28S ribosomal RNA gene, complete cds |
| 804 | 74218 | .1 | | 12653440 | Homo sapiens, proliferating cell nuclear antigen, clone MGC:8367,mRNA, complete cds |
| 805 | 74220 | .1 | | 332023 | Mink cell focus-forming 247 MuLV env gene, 3' end and LTR |
| 806 | 74221 | .1 | | 12731525 | Homo sapiens guanine nucleotide binding protein (G protein), betapolypeptide 2-like 1 (GNB2L1), mRNA |
| 807 | 74226 | | .2 | 12804026 | Homo sapiens, ribosomal protein S7, clone MGC:10268, mRNA, complete cds |
| 808 | 74227 | .1 | | 114198983 | Homo sapiens ribosomal protein L10 (RPL10), mRNA |
| 809 | 74228 | | .2 | 134346409 | Homo sapiens, ribosomal protein S3A, clone MGC:3883, mRNA, complete cds |
| 810 | 74229 | | .2 | 8923000 | Homo sapiens hypothetical protein FLJ11342 (FLJ11342), mRNA |
| 811 | 74231 | .1 | | 337384 | Human 28S ribosomal RNA gene, complete cds |
| 812 | 74233 | .1 | | 11418676 | Homo sapiens ribosomal protein S12 (RPS12), mRNA |
| 813 | 74234 | | .2 | 13436409 | Homo sapiens, ribosomal protein S3A, clone MGC:3883, mRNA, complete cds |
| 814 | 74235 | .1 | | 337381 | Human 28S ribosomal RNA gene |

| SEQ ID NO | Clone ID | 5' | 3' | GenbankID | Genbank Search Results |
|---|---|---|---|---|---|
| 815 | 74238 | | .2 | 13111952 | Homo sapiens, ribosomal protein S24, clone MGC:3989, mRNA, complete cds |
| 816 | 74239 | .1 | | 12803036 | Homo sapiens, glioma-amplified sequence-41, clone MGC:5009, mRNA, complete cds |
| 817 | 74240 | .1 | | 12804728 | Homo sapiens, Similar to ribosomal protein S2, clone MGC:3141, mRNA, complete cds |
| 818 | 74245 | .1 | | 10834778 | Homo sapiens PNAS-113 mRNA, complete cds |
| 819 | 74249 | .1 | | 11558106 | Homo sapiens mRNA for transmembrane protein (THW gene) |
| 820 | 74251 | .1 | | 5031786 | Homo sapiens imogen 38 (IMOGN38), mRNA |
| 821 | 74252 | .1 | | 4504254 | Homo sapiens H2A histone family, member Z (H2AFZ), mRNA |
| 822 | 74254 | .1 | | 337384 | Human 28S ribosomal RNA gene, complete cds |
| 823 | 74257 | .1 | | 337384 | Human 28S ribosomal RNA gene, complete cds |
| 824 | 74258 | .1 | | 337384 | Human 28S ribosomal RNA gene, complete cds |
| 825 | 74260 | .1 | | 13375572 | Homo sapiens GABA-A receptor-associated protein like 2 (GABARAPL2)mRNA, complete cds |
| 826 | 74262 | | .2 | 12655152 | Homo sapiens, S100 calcium-binding protein A6 (calcyclin), cloneMGC:2187, mRNA, compete cds |
| 827 | 74263 | .1 | | 337384 | Human 28S ribosomal RNA gene, complete cds |
| 828 | 74265 | .1 | | 395086 | H.sapiens mRNA for transcription factor BTF 3 |
| 829 | 74266 | .1 | | 13727523 | Homo sapiens exonuclease NEF-sp mRNA, complete cds |
| 830 | 74267 | .1 | | 2275186 | Human BAC clone CTB-20D2 from 7q22, complete sequence [Homo sapiens] |
| 831 | 74268 | .1 | | 337384 | Human 28S ribosomal RNA gene, complete cds |
| 832 | 74269 | | .2 | 12655034 | Homo sapiens, ribosomal protein L4, clone MGC:2201, mRNA, completecds |
| 833 | 74270 | .1 | | 12731525 | Homo sapiens guanine nucleotide binding protein (G protein), betapolypeptide 2-like 1 (GNB2L1), mRNA |
| 834 | 74271 | .1 | | 337384 | Human 28S ribosomal RNA gene, complete cds |
| 835 | 74272 | .1 | | 12006349 | Homo sapiens 60S ribosomal protein L15 (EC45) mRNA, complete cds |
| 836 | 74273 | | .2 | 4506628 | Homo sapiens ribosomal protein L29 (RPL29), mRNA |
| 837 | 74274 | .1 | | 12803522 | Homo sapiens, ribosomal protein L27, clone MGC:1642, mRNA, complete cds |
| 838 | 74275 | .1 | | 9628654 | Murine type C retrovirus, complete genome |
| 839 | 74276 | .1 | | 12653440 | Homo sapiens, proliferating cell nuclear antigen, clone MGC:8367,mRNA, complete cds |
| 840 | 74280 | .1 | | 12653770 | Homo sapiens, claudin 4, clone MGC:1778, mRNA, complete cds |

| SEQ ID NO | Clone ID | 5' | 3' | GenbankID | Genbank Search Results |
|---|---|---|---|---|---|
| 841 | 74285 | .1 | | 11433251 | Homo sapiens KIAA0101 gene product (KIAA0101), mRNA |
| 842 | 74286 | .1 | | 3283923 | Homo sapiens clone 24452 mRNA sequence |
| 843 | 74287 | | .2 | 13111952 | Homo sapiens, ribosomal protein S24, clone MGC:3989, mRNA, completecds |
| 844 | 74289 | .1 | | 12730302 | Homo sapiens H2A histone family, member Z (H2AFZ), mRNA |
| 845 | 74291 | .1 | | 9857564 | Homo sapiens clone RP1-241P17, complete sequence |
| 848 | 74295 | | .2 | 13273284 | Homo sapiens mitochondrion, complete genome |
| 852 | 74298 | .1 | | 5817036 | Homo sapiens mRNA; cDNA DKFZp564D0164 (from clone DKFZp564D0164) |
| 853 | 74300 | .1 | | 12742381 | Homo sapiens hypothetical protein FLJ20550 (FLJ20550), mRNA |
| 855 | 76268 | .1 | | 337384 | Human 28S ribosomal RNA gene, complete cds |
| 856 | 76270 | .3 | | 13436265 | Homo sapiens, eukaryotic translation elongation factor 1 beta 2,clone MGC:10551, mRNA, complete cds |
| 858 | 76275 | .1 | | 11692629 | Murine leukemia virus envelope protein (env) mRNA, complete cds |
| 859 | 76277 | .1 | | 12730302 | Homo sapiens H2A histone family, member Z (H2AFZ), mRNA |
| 860 | 76279 | .1 | | 10281741 | Homo sapiens clone TCBAP0781 mRNA sequence |
| 862 | 76282 | | .2 | 12731525 | Homo sapiens guanine nucleotide binding protein (G protein), betapolypeptide 2-like 1 (GNB2L1), mRNA |
| 863 | 76286 | .1 | | 12653440 | Homo sapiens, proliferating cell nuclear antigen, clone MGC:8367, mRNA, complete cds |
| 864 | 76293 | .1 | | 12736773 | Homo sapiens ferritin, heavy polypeptide 1 (FTH1), mRNA |
| 865 | 76295 | .1 | | 11878115 | Homo sapiens aspartyl beta-hydroxylase 2.8 kb transcript mRNA,complete cds; alternatively spliced |
| 866 | 76297 | .1 | | 13177771 | Homo sapiens, ribosomal protein, large, P0, clone MGC:4770, mRNA,complete cds |
| 868 | 76304 | .1 | | 337384 | Human 28S ribosomal RNA gene, complete cds |
| 869 | 76306 | | .2 | 12804026 | Homo sapiens, ribosomal protein S7, clone MGC:10268, mRNA, completecds |
| 870 | 76307 | | .2 | 395086 | H.sapiens mRNA for transcription factor BTF 3 |
| 871 | 76308 | .1 | | 12742435 | Homo sapiens HBV associated factor (XAP4), mRNA |
| 872 | 76309 | .3 | | 12737278 | Homo sapiens keratin 8 (KRT8), mRNA |
| 873 | 76311 | .1 | | 12737278 | Homo sapiens keratin 8 (KRT8), mRNA |
| 874 | 76317 | | .2 | 12728616 | Homo sapiens thymosin, beta 10 (TMSB10), mRNA |
| 875 | 76319 | | .2 | 13529265 | Homo sapiens, clone MGC:12520, mRNA, complete cds |

| SEQ ID NO | Clone ID | 5' | 3' | GenbankID | Genbank Search Results |
|---|---|---|---|---|---|
| 876 | 76320 | .1 | | 12741419 | Homo sapiens ribosomal protein S19 (RPS19), mRNA |
| 877 | 76321 | | .2 | 8655645 | Homo sapiens mRNA; cDNA DKFZp762B195 (from clone DKFZp762B195) |
| 878 | 76327 | | .2 | 12653648 | Homo sapiens, Similar to ribosomal protein L14, clone MGC:1644,mRNA, complete cds |
| 879 | 76328 | .1 | | 12730775 | Homo sapiens MAD2 (mitotic arrest deficient, yeast, homolog)-like 1(MAD2L1), mRNA |
| 880 | 76333 | .1 | | 337384 | Human 28S ribosomal RNA gene, complete cds |
| 882 | 76335 | .1 | | 12739361 | Homo sapiens diaphorase (NADH/NADPH) (cytochrome b-5 reductase) (DIA4), mRNA |
| 887 | 76343 | .1 | | 11640567 | Homo sapiens MSTP030 mRNA, complete cds |
| 888 | 76347 | .1 | | 12653770 | Homo sapiens, claudin 4, clone MGC:1778, mRNA, complete cds |
| 889 | 76349 | | .2 | 12736773 | Homo sapiens ferritin, heavy polypeptide 1 (FTH1), mRNA |
| 890 | 76351 | .1 | | 12653440 | Homo sapiens, proliferating cell nuclear antigen, clone MGC:8367,mRNA, complete cds |
| 891 | 76353 | | .2 | 12728616 | Homo sapiens thymosin, beta 10 (TMSB10), mRNA |
| 892 | 76354 | .1 | | 12729151 | Homo sapiens hypothetical protein FLJ20432 (FLJ20432), mRNA |
| 893 | 76355 | .1 | | 332023 | Mink cell focus-forming 247 MuLV env gene, 3' end and LTR |
| 895 | 76360 | .1 | | 337381 | Human 28S ribosomal RNA gene |
| 896 | 76843 | | .2 | 12654114 | Homo sapiens, annexin A3, clone MGC:5043, mRNA, complete cds |
| 897 | 76844 | | .2 | 9954372 | Homo sapiens zinc finger sarcoma gene short isoform (ZSG) mRNA,complete cds |
| 898 | 76845 | | .2 | 12653770 | Homo sapiens, claudin 4, clone MGC:1778, mRNA, complete cds |
| 899 | 76846 | .1 | | 12731525 | Homo sapiens guanine nucleotide binding protein (G protein), betapolypeptide 2-like 1 (GNB2L1), mRNA |
| 900 | 76847 | .1 | | 12653770 | Homo sapiens, claudin 4, clone MGC:1778, mRNA, complete cds |
| 901 | 76850 | .1 | | 4505812 | Homo sapiens dynein, cytoplasmic, light polypeptide (PIN), mRNA |
| 902 | 76851 | .1 | | 11419204 | Homo sapiens sorcin (SRI), mRNA |
| 903 | 76853 | .1 | | 12653440 | Homo sapiens, proliferating cell nuclear antigen, clone MGC:8367,mRNA, complete cds |
| 904 | 76854 | .1 | | 178746 | Human apurinic/apyrimidinic endonuclease (HPA1h) mRNA, complete cds |
| 905 | 76855 | .1 | | 12003267 | Homo sapiens C3orf1 mRNA, complete CDS |

| SEQ ID NO | Clone ID | 5' | 3' | GenbankID | Genbank Search Results |
|---|---|---|---|---|---|
| 906 | 76856 | .1 | | 5453739 | Homo sapiens myosin, light polypeptide, regulatory, non-sarcomeric(20kD) (MLCB), mRNA |
| 907 | 76857 | | .2 | 11907512 | Homo sapiens mRNA for RECC, complete cds |
| 908 | 76858 | .1 | | 12655072 | Homo sapiens, similar to rat HREV107, clone MGC:1240, mRNA,complete cds |
| 909 | 76859 | .1 | | 12736773 | Homo sapiens ferritin, heavy polypeptide 1 (FTH1), mRNA |
| 910 | 76860 | .1 | | 12728616 | Homo sapiens thymosin, beta 10 (TMSB10), mRNA |
| 911 | 76861 | .1 | | 6330699 | Homo sapiens mRNA for KIAA1229 protein, partial cds |
| 912 | 76862 | .1 | | 12736773 | Homo sapiens ferritin, heavy polypeptide 1 (FTH1), mRNA |
| 913 | 76863 | | .2 | 11418676 | Homo sapiens ribosomal protein S12 (RPS12), mRNA |
| 914 | 76864 | | .2 | 11419825 | Homo sapiens ribosomal protein S4, X-linked (RPS4X), mRNA |
| 916 | 76866 | .1 | | 12730302 | Homo sapiens H2A histone family, member Z (H2AFZ), mRNA |
| 917 | 76869 | .1 | | 12654176 | Homo sapiens, clone MGC:5333, mRNA, complete cds |
| 918 | 76870 | .1 | | 13543411 | Homo sapiens, ribosomal protein, large, P0, clone MGC:3679, mRNA,complete cds |
| 920 | 76872 | .1 | | 61651 | Murine leukemia virus MGC13 LTR (LTR=long terminal repeat) |
| 921 | 76873 | .1 | | 12006349 | Homo sapiens 60S ribosomal protein L15(EC45) mRNA, complete cds |
| 922 | 76874 | | .2 | 9628654 | Murine type C retrovirus, complete genome |
| 923 | 76875 | .1 | | 12730302 | Homo sapiens H2A histone family, member Z (H2AFZ), mRNA |
| 924 | 76876 | .1 | | 929656 | H.sapiens mRNA for neutrophil gelatinase associate lipocalin |
| 925 | 76878 | .1 | | 8894241 | Human DNA sequence from clone RP5-875K15 on chromosome 11p12-14.1 |
| 926 | 76879 | .1 | | 13177771 | Homo sapiens, ribosomal protein, large P0, clone MGC:4770, mRNA,complete cds |
| 927 | 76880 | .1 | | 12736773 | Homo sapiens ferritin, heavy polypeptide 1 (FTH1), mRNA |
| 928 | 76881 | .1 | | 11425444 | Homo sapiens small nuclear ribonucleoprotein D2 polypeptide (16.5kD) (SNRPD2), mRNA |
| 929 | 76882 | .1 | | 7023162 | Homo sapiens cDNA FLJ10861 fis, clone NT2RP4001571 |
| 930 | 76883 | | .2 | 13273284 | Homo sapiens mitochondrion, complete genome |
| 931 | 76884 | | .2 | 12734905 | Homo sapiens argininosuccinate synthetase (ASS), mRNA |

| SEQ ID NO | Clone ID | 5' | 3' | GenbankID | Genbank Search Results |
|---|---|---|---|---|---|
| 932 | 76886 | .1 | | 12653440 | Homo sapiens, proliferating cell nuclear antigen, clone MGC:8367,mRNA, complete cds |
| 933 | 76887 | .1 | | 522297 | Mink cell focus forming virus long terminal repeat (LTR) RNA |
| 846, 847 | 74293 | .3 | .2 | 12653440 | Homo sapiens, proliferating cell nuclear antigen, clone MGC:8367, mRNA, complete cds |
| 849, 850, 851 | 74296 | .1 & .3 | .2 | 2869145 | Homo sapiens transcriptional coactivator ALY mRNA, partial cds |
| 883, 884, 885 | 76337 | .1 & .3 | .2 | 11436804 | Homo sapiens similar to dendritic cell protein (H. sapiens) (LOC63319), mRNA |

TABLE 5: COLON TUMOR PROTEIN cDNAS FROM A SUBTRACTED SEROLOGICAL EXPRESSION LIBRARY SHOWING NO SIGNIFICANT SIMILARITY TO SEQUENCES IN GENBANK.

| SEQ ID NO | Clone ID | 5' | 3' |
|---|---|---|---|
| 797 | 74210 | .1 | |
| 854 | 76267 | .1 | |
| 857 | 76272 | .1 | |
| 861 | 76281 | | .2 |
| 867 | 76300 | .1 | |
| 881 | 76334 | .1 | |
| 886 | 76342 | .1 | |
| 894 | 76357 | .1 | |
| 915 | 76865 | .1 | |
| 919 | 76871 | .1 | |
| 934 | 76889 | | .2 |

## EXAMPLE 4

### ANALYSIS OF cDNA EXPRESSION USING MICROARRAY TECHNOLOGY

In additional studies, sequences disclosed herein are evaluated for overexpression in specific tumor tissues by microarray analysis. Using this approach, cDNA sequences are PCR amplified and their mRNA expression profiles in tumor and normal tissues are examined using cDNA microarray technology essentially as described (Shena, M. *et al.*, 1995 Science *270*:467-70). In brief, the clones are arrayed onto glass slides as multiple replicas, with each location corresponding to a unique cDNA clone (as many as 5500 clones can be arrayed on a single slide, or chip). Each chip is hybridized with a pair of cDNA probes that are fluorescence-labeled with Cy3 and Cy5, respectively. Typically, 1μg of polyA$^+$ RNA is used to generate each cDNA probe. After hybridization, the chips are scanned and the fluorescence intensity recorded for both Cy3 and Cy5 channels. There are multiple built-in quality control steps. First, the probe quality is monitored using a panel of ubiquitously expressed genes. Secondly, the control plate also can include yeast DNA fragments of which

complementary RNA may be spiked into the probe synthesis for measuring the quality of the probe and the sensitivity of the analysis. Currently, the technology offers a sensitivity of 1 in 100,000 copies of mRNA. Finally, the reproducibility of this technology can be ensured by including duplicated control cDNA elements at different locations.

## EXAMPLE 5

### ANALYSIS OF cDNA EXPRESSION USING REAL-TIME PCR

Real-time PCR (*see* Gibson et al., *Genome Research* 6:995-1001, 1996; Heid et al., *Genome Research* 6:986-994, 1996) is a technique that evaluates the level of PCR product accumulation during amplification. This technique permits quantitative evaluation of mRNA levels in multiple samples. Briefly, mRNA is extracted from tumor and normal tissue and cDNA is prepared using standard techniques. Real-time PCR is performed, for example, using a Perkin Elmer/Applied Biosystems (Foster City, CA) 7700 Prism instrument. Matching primers and fluorescent probes are designed for genes of interest using, for example, the primer express program provided by Perkin Elmer/Applied Biosystems (Foster City, CA). Optimal concentrations of primers and probes are initially determined by those of ordinary skill in the art, and control (*e.g.*, β-actin) primers and probes are obtained commercially from, for example, Perkin Elmer/Applied Biosystems (Foster City, CA). To quantitate the amount of specific RNA in a sample, a standard curve is generated using a plasmid containing the gene of interest. Standard curves are generated using the Ct values determined in the real-time PCR, which are related to the initial cDNA concentration used in the assay. Standard dilutions ranging from $10\text{-}10^6$ copies of the gene of interest are generally sufficient. In addition, a standard curve is generated for the control sequence. This permits standardization of initial RNA content of a tissue sample to the amount of control for comparison purposes.

An alternative real-time PCR procedure can be carried out as follows: The first-strand cDNA to be used in the quantitative real-time PCR is synthesized from 20μg of total RNA that is first treated with DNase I (*e.g.*, Amplification Grade, Gibco

BRL Life Technology, Gaithersburg, MD), using Superscript Reverse Transcriptase (RT) (*e.g.*, Gibco BRL Life Technology, Gaithersburg, MD). Real-time PCR is performed, for example, with a GeneAmp™ 5700 sequence detection system (PE Biosystems, Foster City, CA). The 5700 system uses SYBR™ green, a fluorescent dye that only intercalates into double stranded DNA, and a set of gene-specific forward and reverse primers. The increase in fluorescence is monitored during the whole amplification process. The optimal concentration of primers is determined using a checkerboard approach and a pool of cDNAs from colon tumors is used in this process. The PCR reaction is performed in 25μl volumes that include 2.5μl of SYBR green buffer, 2μl of cDNA template and 2.5μl each of the forward and reverse primers for the gene of interest. The cDNAs used for RT reactions are diluted approximately 1:10 for each gene of interest and 1:100 for the β-actin control. In order to quantitate the amount of specific cDNA (and hence initial mRNA) in the sample, a standard curve is generated for each run using the plasmid DNA containing the gene of interest. Standard curves are generated using the Ct values determined in the real-time PCR which are related to the initial cDNA concentration used in the assay. Standard dilution ranging from 20-$2x10^6$ copies of the gene of interest are used for this purpose. In addition, a standard curve is generated for β-actin ranging from 200fg-2000fg. This enables standardization of the initial RNA content of a tissue sample to the amount of β-actin for comparison purposes. The mean copy number for each group of tissues tested is normalized to a constant amount of β-actin, allowing the evaluation of the over-expression levels seen with each of the genes.

## EXAMPLE 6

### PEPTIDE PRIMING OF T-HELPER LINES

Generation of $CD4^+$ T helper lines and identification of peptide epitopes derived from tumor-specific antigens that are capable of being recognized by $CD4^+$ T cells in the context of HLA class II molecules, is carried out as follows:

Fifteen-mer peptides overlapping by 10 amino acids, derived from a tumor-specific antigen, are generated using standard procedures. Dendritic cells (DC) are derived from PBMC of a normal donor using GM-CSF and IL-4 by standard

protocols. CD4$^+$ T cells are generated from the same donor as the DC using MACS beads (Miltenyi Biotec, Auburn, CA) and negative selection. DC are pulsed overnight with pools of the 15-mer peptides, with each peptide at a final concentration of 0.25 µg/ml. Pulsed DC are washed and plated at 1 x $10^4$ cells/well of 96-well V-bottom plates and purified CD4$^+$ T cells are added at 1 x $10^5$/well. Cultures are supplemented with 60 ng/ml IL-6 and 10 ng/ml IL-12 and incubated at 37°C. Cultures are restimulated as above on a weekly basis using DC generated and pulsed as above as antigen presenting cells, supplemented with 5 ng/ml IL-7 and 10 U/ml IL-2. Following 4 *in vitro* stimulation cycles, resulting CD4$^+$ T cell lines (each line corresponding to one well) are tested for specific proliferation and cytokine production in response to the stimulating pools of peptide with an irrelevant pool of peptides used as a control.

## EXAMPLE 7

### GENERATION OF TUMOR-SPECIFIC CTL LINES USING IN VITRO WHOLE-GENE PRIMING

Using *in vitro* whole-gene priming with tumor antigen-vaccinia infected DC (see, for example, Yee et al, *The Journal of Immunology*, 157(9):4079-86, 1996), human CTL lines are derived that specifically recognize autologous fibroblasts transduced with a specific tumor antigen, as determined by interferon-γ ELISPOT analysis. Specifically, dendritic cells (DC) are differentiated from monocyte cultures derived from PBMC of normal human donors by growing for five days in RPMI medium containing 10% human serum, 50 ng/ml human GM-CSF and 30 ng/ml human IL-4. Following culture, DC are infected overnight with tumor antigen-recombinant vaccinia virus at a multiplicity of infection (M.O.I) of five, and matured overnight by the addition of 3 µg/ml CD40 ligand. Virus is then inactivated by UV irradiation. CD8+ T cells are isolated using a magnetic bead system, and priming cultures are initiated using standard culture techniques. Cultures are restimulated every 7-10 days using autologous primary fibroblasts retrovirally transduced with previously identified tumor antigens. Following four stimulation cycles, CD8+ T cell lines are identified that specifically produce interferon-γ when stimulated with tumor antigen-transduced autologous fibroblasts. Using a panel of HLA-mismatched B-LCL lines transduced

with a vector expressing a tumor antigen, and measuring interferon-γ production by the CTL lines in an ELISPOT assay, the HLA restriction of the CTL lines is determined.

## EXAMPLE 8

### GENERATION AND CHARACTERIZATION OF ANTI-TUMOR ANTIGEN MONOCLONAL ANTIBODIES

Mouse monoclonal antibodies are raised against *E. coli* derived tumor antigen proteins as follows: Mice are immunized with Complete Freund's Adjuvant (CFA) containing 50 μg recombinant tumor protein, followed by a subsequent intraperitoneal boost with Incomplete Freund's Adjuvant (IFA) containing 10μg recombinant protein. Three days prior to removal of the spleens, the mice are immunized intravenously with approximately 50μg of soluble recombinant protein. The spleen of a mouse with a positive titer to the tumor antigen is removed, and a single-cell suspension made and used for fusion to SP2/O myeloma cells to generate B cell hybridomas. The supernatants from the hybrid clones are tested by ELISA for specificity to recombinant tumor protein, and epitope mapped using peptides that spanned the entire tumor protein sequence. The mAbs are also tested by flow cytometry for their ability to detect tumor protein on the surface of cells stably transfected with the cDNA encoding the tumor protein.

## EXAMPLE 9

### SYNTHESIS OF POLYPEPTIDES

Polypeptides are synthesized on a Perkin Elmer/Applied Biosystems Division 430A peptide synthesizer using FMOC chemistry with HPTU (O-Benzotriazole-N,N,N',N'-tetramethyluronium hexafluorophosphate) activation. A Gly-Cys-Gly sequence is attached to the amino terminus of the peptide to provide a method of conjugation, binding to an immobilized surface, or labeling of the peptide. Cleavage of the peptides from the solid support is carried out using the following cleavage mixture: trifluoroacetic acid:ethanedithiol:thioanisole:water:phenol (40:1:2:2:3). After cleaving for 2 hours, the peptides are precipitated in cold methyl-t-butyl-ether. The peptide pellets are then dissolved in water containing 0.1% trifluoroacetic acid (TFA)

and lyophilized prior to purification by C18 reverse phase HPLC. A gradient of 0%-60% acetonitrile (containing 0.1% TFA) in water (containing 0.1% TFA) is used to elute the peptides. Following lyophilization of the pure fractions, the peptides are characterized using electrospray or other types of mass spectrometry and by amino acid analysis.

From the foregoing it will be appreciated that, although specific embodiments of the invention have been described herein for purposes of illustration, various modifications may be made without deviating from the spirit and scope of the invention. Accordingly, the invention is not limited except as by the appended claims.

# CLAIMS

What is Claimed:

1. An isolated polynucleotide comprising a sequence selected from the group consisting of:

(a) sequences provided in SEQ ID NO:1-934;

(b) complements of the sequences provided in SEQ ID NO:1-934;

(c) sequences consisting of at least 20 contiguous residues of a sequence provided in SEQ ID NO:1-934;

(d) sequences that hybridize to a sequence provided in SEQ ID NO:1-934, under highly stringent conditions;

(e) sequences having at least 75% identity to a sequence of SEQ ID NO:1-934;

(f) sequences having at least 90% identity to a sequence of SEQ ID NO:1-934; and

(g) degenerate variants of a sequence provided in SEQ ID NO:1-934.

2. An isolated polypeptide comprising an amino acid sequence selected from the group consisting of:

(a) sequences encoded by a polynucleotide of claim 1; and

(b) sequences having at least 70% identity to a sequence encoded by a polynucleotide of claim 1; and

(c) sequences having at least 90% identity to a sequence encoded by a polynucleotide of claim 1.

3. An expression vector comprising a polynucleotide of claim 1 operably linked to an expression control sequence.

4. A host cell transformed or transfected with an expression vector according to claim 3.

5. An isolated antibody, or antigen-binding fragment thereof, that specifically binds to a polypeptide of claim 2.

6. A method for detecting the presence of a cancer in a patient, comprising the steps of:

(a) obtaining a biological sample from the patient;

(b) contacting the biological sample with a binding agent that binds to a polypeptide of claim 2;

(c) detecting in the sample an amount of polypeptide that binds to the binding agent; and

(d) comparing the amount of polypeptide to a predetermined cut-off value and therefrom determining the presence of a cancer in the patient.

7. A fusion protein comprising at least one polypeptide according to claim 2.

8. An oligonucleotide that hybridizes to a sequence recited in SEQ ID NO:1-934 under highly stringent conditions.

9. A method for stimulating and/or expanding T cells specific for a tumor protein, comprising contacting T cells with at least one component selected from the group consisting of:

(a) polypeptides according to claim 2;

(b) polynucleotides according to claim 1; and

(c) antigen-presenting cells that express a polynucleotide according to claim 1,

under conditions and for a time sufficient to permit the stimulation and/or expansion of T cells.

10. An isolated T cell population, comprising T cells prepared according to the method of claim 9.

11. A composition comprising a first component selected from the group consisting of physiologically acceptable carriers and immunostimulants, and a second component selected from the group consisting of:

(a) polypeptides according to claim 2;

(b) polynucleotides according to claim 1;

(c) antibodies according to claim 5;

(d) fusion proteins according to claim 7;

(e) T cell populations according to claim 10; and

(f) antigen presenting cells that express a polypeptide according to claim 2.

12. A method for stimulating an immune response in a patient, comprising administering to the patient a composition of claim 11.

13. A method for the treatment of a colon cancer in a patient, comprising administering to the patient a composition of claim 11.

14. A method for determining the presence of a cancer in a patient, comprising the steps of:

(a) obtaining a biological sample from the patient;

(b) contacting the biological sample with an oligonucleotide according to claim 8;

(c) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide; and

(d) compare the amount of polynucleotide that hybridizes to the oligonucleotide to a predetermined cut-off value, and therefrom determining the presence of the cancer in the patient.

15. A diagnostic kit comprising at least one oligonucleotide according to claim 8.

16. A diagnostic kit comprising at least one antibody according to claim 5 and a detection reagent, wherein the detection reagent comprises a reporter group.

17. A method for the treatment of colon cancer in a patient, comprising the steps of:

(a) incubating CD4+ and/or CD8+ T cells isolated from a patient with at least one component selected from the group consisting of: (i) polypeptides according to claim 2; (ii) polynucleotides according to claim 1; and (iii) antigen presenting cells that express a polypeptide of claim 2, such that T cell proliferate;

(b) administering to the patient an effective amount of the proliferated T cells,

and thereby inhibiting the development of a cancer in the patient.

SEQUENCE LISTING

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Pyle, Ruth
Xu, Jiangchun
Secrist, Heather

<120> COMPOSITIONS AND METHODS FOR THE THERAPY
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<223> n = A,T,C or G

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gggagcnctg gaggcccggc ctggccgctc ccggccctgn ggtgcacatc ggccctgagt 60
cccgtcccag gctctgggct cgggcagccg ccgcctggcc gagtggccgc catgctcctg 120
ccttgggcca cctctgcccc cggcctggcc tgggggcctc tggtgctggg cctcttcggg 180
ctcctggcag catcgcagcc ccaggcggtg cctccatatg cgtcggagaa ccagacctgc 240
agggaccagg aaaaggaata ctatgagccc cagcaccgca tctgctgctc ccgctgcccg 300
ccaggcacct atgtctcagc taaatgtagc cgcatccggg acacagtttg tgccanatgt 360
gccgagaatt cctacaacga gcactggaac tacctgacca tctgccagct gtgccgcccc 420
tgtgacccaa tgatgggcct cgaggagatt gccccctgca caagcaaacg gaagacccag 480
tgccgctgcc ancccggaat ggtctgngct gcctgggccc tcgaatg 527

<210> 11
<211> 774
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 2, 56, 57, 724, 752, 757
<223> n = A,T,C or G

<400> 11
cntctacgcg cgcttctcgc cggccccgct ctccatgaag cagttcctgg acttcnnatc 60
agtgaatgct tgtgaaaaga cctcatttat gtttctgcgg caagagttgc ctgtcagact 120
ggcaaatata atgaaagaaa taagtctcct tccagataat cttctcagga caccatccgt 180
tcaattggta caaagctggt atatccagag tcttcaggag cttcttgatt ttaaggacaa 240
aagtgctgag gatgctaaag ctatttatga ctttacagat actgtgatac ggatcagaaa 300
ccgacacaat gatgtcattc ccacaatggc ccagggtgtg attgaataca aggagagctt 360
tggggtggat cctgtcacca gccagaatgt tcagtacttt ttggatcgat tctacatgag 420
tcgcatttca attagaatgt tactcaatca gcactcttta ttgtttggtg gaaaaggcaa 480
aggaagtcca tctcatcgaa aacacattgg aagcataaat ccaaactgca atgtacttga 540
agttattaaa gatggctatg aaaatgctag gcgtctgtgt gatttgtatt atattaactc 600
tcccgaacta gaacttgaag actaaatgca aaataccagg acagccaata caagtggttt 660
atgtaccatc ccatctctat ccatgggtgg tttggaactt ttcaagaatg caatggagag 720
cccnctatgg gaccaccatg ccaacagaag gngtttnccc ccctattcaa gttc 774

<210> 12
<211> 1110
<212> DNA

<213> Homo sapiens

<220>
<221> misc_feature
<222> 693, 695, 712, 730, 736, 741, 745, 747, 752, 760, 765, 771, 776, 789, 793, 797, 799, 800, 802, 810, 819, 829, 834, 846, 847, 854, 856, 882, 885, 888, 894, 898, 908, 911, 913, 914, 915, 916, 921, 930, 931, 933, 939, 953, 959, 967, 968
<223> n = A,T,C or G

<221> misc_feature
<222> 978, 979, 984, 985, 986, 990, 999, 1001, 1007, 1009, 1016, 1029, 1036, 1037, 1042, 1046, 1055, 1059, 1079, 1110
<223> n = A,T,C or G

<400> 12

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gcgccagcgg cctcgccgcc cgtcaagctg tccacatccc tggcctcagc ccgccacatc 60
accctgacct gcttacgccc agattttctt caatcacatc tgaataaatc acttgaagaa 120
agcttatagc ttcattgcac catgtgtggc atttgggcgc tgtttggcag tgatgattgc 180
ctttctgttc agtgtctgag tgctatgaag attgcacaca gaggtccaga tgcattccgt 240
tttgagaatg tcaatggata caccaactgc tgctttggat ttcaccggtt ggcggtagtt 300
gacccgctgt ttggaatgca gccaattcga gtgaagaaat atccgtattt gtggctctgt 360
tacaatggtg aaatctacaa ccataagaag atgcaacagc attttgaatt tgaataccag 420
accaaagtgg atggtgagat aatccttcat ctttatgaca aaggaggaat tgagcaaaca 480
atttgtatgt tggatggtgt gtttgcattt gttttactgg atactgccaa taagaaagtg 540
ttcctgggta gagatacata tggagtcaga cctttgttta aagcaatgac agaagatgga 600
tttttggctg tatgttcaga agctaaaagg tctttgttac atttgaagca ctccggcgac 660
tcccttttt aaaaagtggg aggccttttt ttncngggac acctattgaa gnttttggat 720
tttaaagccn aatggnaaaa ntttncntcc cngggaaaan ggttnaaata ncatcnctgg 780
tccgggatng ganccсngnn cncccccttn tgacaatgng gagaaactnt ttcnggtttt 840
gaaaannaac ctgngnaaaa caaccccсgg gaacttttta anagngcntg aaanaaancc 900
ttttgggnac nannnnaagg natggggggn ncntttttng gggggggtgg ggncccacnc 960
tgggtgnncg ccccctcnng tgannnaccn gtgaggaana nccccgncnc cttttntcct 1020
tcccgaaant ttttcnntgt gnggcnggga gaaanaacnc cccctttctt ggcggggtnt 1080
taaaaagggg gggcgacact cgtttttggn 1110
```

<210> 13
<211> 769
<212> DNA
<213> Homo sapiens



<220>
<221> misc_feature
<222> 8, 12, 16, 20, 27, 315, 369, 432, 437, 439, 447, 474, 499, 542, 580, 602, 607, 610, 613, 614, 620, 621, 622, 639, 658, 682, 708, 715, 716, 749, 760
<223> n = A,T,C or G

<400> 13

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gacattcntg anacgnatgn ttttggnagc acctggtatt ttcttattgg gtcaaagaaa 60
aagattctca accatgccag aaacagaaac acatgagaga gagactgaat tgttttcacc 120
accttctgat gtccgaggca tgacaaaact tgatagaaca gcttttaaaa agacagtcaa 180
```

<210> 14
<211> 818
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 7, 14, 23, 35, 40, 44, 67, 672, 712, 749, 762, 780, 802
<223> n = A,T,C or G

<400> 14
acaacanttg ttgnatgggg gcncctcgac cacanccgan accnttttaa agaataacat 60
ctcttcnggc cacgtacccc atggacctct cacgagaccc tctgagcaac tggactatct 120
ttccagagtc cagggattcc aggttgaata caaagacttc cccaaaaaca acaagaacga 180
atttgtatct cttatcaatt gctcctctca gccacctctg atcagccatg gtatcggcaa 240
ggatgtggag tcctgccatg atatggctgc gctgaacatc ttaaagttgc tgtctgagtt 300
ggaccaacaa agtacagaga tgccaagaac aggaaacgga ccaatgtctg tgtgtgggag 360
gtgctgaacc ttttctggcc atgaaccatt ataaaatccc aacatatata ctgaaaatac 420
tgaaactgct ttgaaaattt ggaatttctg atacctccag tgggccgaga gacacggtgg 480
gtaaaggatg tgggcagcag cagggaagac aacagaaaca caaggaggcg gctgtggccg 540
ggctggactg tgcgggggtt tgttgtgatg gccactcggt gacctggcgg tcccctacgc 600
aatagcaagc tgcctgtggg ggaagaaggg ctggccaacc cagctgggtt ttcccgggga 660
cccccagcca gnatccccca ccccttggg gccccccttc ccgggggttt tngggggccc 720
cttttttttt ttttttcccc cccttgggng gggggggaaa angggaaaag gaaaaacccn 780
gggggaaccc gaaacccccc cnttttttttt ttaaaaag 818

<210> 15
<211> 664
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 89, 176, 303, 346, 400, 456, 462, 490, 508, 557, 572, 583,
621, 658
<223> n = A,T,C or G

<400> 15
tttttttttt ttttttgtgt taaaattact tttattcagg atgaaaaata caatatgtaa 60
ccagattaga tgatagtctg tgattaggnc tttaccacat atttcaaaag aactacatac 120
ttacttccca ttgttactgc aatatatttc tttttattta ttattactta gaaggntaca 180
atgtagtgtt ttacgtagct tttctttaat agcagataga ggacattttg catacaaata 240
caggcagaaa aaaaattaac acatgacttt ttaaagtaag aacaaggaag acccaaatct 300
acnacttgga gttgagagct cagggaattg gtttttcttt aaatangggc tttcttgggg 360
atgacatggc cgataaaagc tctaactttg cagaccggcn cagcataaag cagtttccca 420
tgcaatggat gaagatggac tgaggaaaaa gggggncatg gntttccttt tatataaaac 480
aattttcttn ttttcaaaat atctttgntg caaaaaaccc ccttggcccc cacccccccac 540
ctatctaaaa aatacanttc tactttagcc cnctttggcc ganccccctta agagaaccaa 600
gtaaaaggct tatgtttatg ntttgggtga acaacaaata tttccctttt tgggcccncc 660
ttgc 664

<210> 16
<211> 465
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 21, 25, 190, 193, 237, 245, 274, 297, 298, 357, 368, 372,
375, 452, 459
<223> n = A,T,C or G

<400> 16
ctcaaagatc atattaccaa ngggngccca cttgagcata ttttcatttt gacacagaaa 60
caaaatttag tacaaccttt cctagttccc atgtcttgat tttcatcatt acatgcacag 120
cagaccttta cctattgtga taccagaaca catcattgtc tttggttccc ttcaaagaga 180
attttattgn tgntttgtat tttcaagtcc ttaatagttc ttgaaactcc tagttgnttt 240
cttgntgaaa gcagacacac atttagtgca ccgnttattt taccttcggg ggaagannaa 300
tgttttatcc ctccttgatc aaatattgga agatggtata aagcttgcct gtttcanaaa 360
gaataatnta gngangactc ctcttttagg atcattgttg tacttgatac atatgtcgta 420
ctgctataca agaagacaaa aggaaattgt tntactaant aacta 465

<210> 17
<211> 531
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 21, 30, 78, 82, 109, 113, 179, 181, 201, 258, 265, 285, 312, 313, 357, 361, 367, 403, 427, 446, 452, 502, 518
<223> n = A,T,C or G

<400> 17
ctttccacgc caagtggccg ntccaggcan gcagtgtcgt cttggttcag ccaaggtcac 60
agagggagtg atagcttncg cncagccctg gctacggact ctgggcatnt ttncactgcc 120
ccgcttgcgc cacctgttag gcaggatcgt tttcctctg gggcaagatc aaaatccang 180
ncctgcagga agaaactcct nttaaaaata attaagcctg atcaagatga caacctccca 240
aaagcaccga gacttcgngg caaanccccat ggggagaag ccagngggga gcctggctgg 300
gattggtgaa gnnctgggca agaagctgga ggaaaggggt tttgacaagg cctatgntgt 360
ncttggncag tttctggtgc taaagaaaga tgaagacctc ttncggaaat ggctgaaaga 420
cacttgnggg gccaacgcca agcagncccc gnactgcttc ggatgccttc agagtggtgc 480
gacaccttct tgagatgctc tntgggaagc tttcaatncc caccctcatc a 531

<210> 18
<211> 516
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 92, 422, 493, 513
<223> n = A,T,C or G

<400> 18
gtcgacctct gcagtgggag cagctctcct gccacagctc ctcacccccct gaaaatgttc 60
gcctgctcca agtttgtctc cactccctgg gntggtcaag agcacctcac agctgctgag 120
ccgtccgcta tctgcagtgg tgctgaaacg accggagata ctgacagatg agagcctcag 180
cagcttggca gtctcatgtc cccttacctc acttgtctct agccgcagct tccaaaccag 240
cgccatttca agggacatcg acacagcagc caagttcatt ggagctgggg ctgccacagt 300
tggggtggct ggttctgggg ctgggattgg aactgtgttt gggagcctca tcattggtta 360
tgccaggaac ccttctctga acaacagctc ttctctacgc attctgggct ttgcctctcg 420
angcatgggc tttttgctg atggagcctt ttcatccttt tgcatgtgaa ggagccgctc 480
acctccatag ttntccgcgt tgggtggccc cgntgt 516

<210> 19
<211> 696
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 11, 14, 384, 392, 398, 403, 413, 422, 432, 438, 456, 464,

467, 506, 532, 536, 543, 557, 577, 581, 585, 592, 612, 619,
620, 625, 633, 634, 638, 639, 642, 644, 652, 657
<223> n = A,T,C or G

<400> 19
gcctttttt nttnttttag tttgggatat gacctttatt gaacttatcc accagagtgg 60
aaataatgtc tgtacaaaac caaatggggg gtactataac ttctgcatca caattaaaat 120
ccaaacagtt ttttaaaaac agtcaactca atcaaaaccc actacttcag aatcaatagc 180
ttctttgaag ccacagtaac acttaaatat ggttaagact cgaatgcaga aatttggttg 240
gttggaaagc taattaaact tccaacttgc tcaaatagaa ttacaaaaag gcaaaattgt 300
gtttttcaca gagatacagt ccactggaat caccaacact ggacagctgt tagagtattt 360
agagtcctga gataacaagg aatncaggca tnctttanac agncttctgg tgnccttttct 420
tnccaatcag anatttgngg atgtgggggga atgccncccc cccngcnatt tgtagccttg 480
atgaaagaat ccattcttct tttccnccaa tagcaagttg caaggggacg angggnaatc 540
ccntttacct ttaagtnttt tgatgcattt cctgccngtt naagnacctt gnggggaggg 600
ctcccggatg gntgcgctnn acaancggag tcnncccnnc cncntgccgg gnggccnaaa 660
ttagggcaaa aaaccgccct ggactgaacc ggtttt 696

<210> 20
<211> 509
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 18, 153, 270, 282, 372, 375, 387, 412, 418, 467, 505
<223> n = A,T,C or G

<400> 20
cgcggtgcga ctaatganta gggggtggga tctcaccgtg ggtccgatta gccttttctc 60
tgccttgctt gcttgagctt cagcggaatt cgaaatggct ggcggtaagg ctggaaagga 120
ctccggaaag gccaagacaa aggcggtttc ccnctcgcag agagccggct tgcagttccc 180
agtgggccgt attcatcgac acctaaaatt taggacgacc agtcatggac gtgtgggcgc 240
gactgcccgc ttgtgtacag cgcaaccatn ctggagtacc tnacccgaaa aggacttgaa 300
ctgcaggaaa tgcatcaaaa gacttaaagt aaagcgtatt acccctcgca cttgcacttg 360
ctattcgtgg anatnaaaaa tggattnttt catcaaggtt ccaattgctg gnggggggngt 420
cattccccaa attaacaaat tttttgattg ggaaaaaaag gacaacnaaa aaacttgctt 480
aaagggatgc cctggaattc cttgntttt 509

<210> 21
<211> 917
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 81, 568, 578, 591, 606, 638, 649, 654, 689, 691, 694, 702,
704, 707, 719, 742, 747, 748, 761, 765, 775, 800, 806, 808,
813, 822, 823, 828, 833, 839, 845, 848, 852, 859, 895, 913
<223> n = A,T,C or G

<400> 21
gcgcccacaa tttgcgcgct ctctttctgc tgctccccag ctctcggata cagccgacac 60
catgggtttc ggagacctga ngggccctgc cggcctccag gtgctcaacg attacctggc 120
ggacaagagc tacatcgagg ggtatgtgcc atcacaagca gatgtggcag tatttgaagc 180
cgtgtccagc ccaccgcctg ccgacttgtg tcatgcccta cgttggtata atcacatcaa 240
gtcttacgaa aaggaaaagg ccagcctgcc aggagtgaag aaagctttgg gcaaatatgg 300
tcctgcccga tgtggaagac actacaggaa gtggagctac agatagtaaa gatgatgatg 360
acattgacct ctttggatct gatgatgagg aggaaagtga agaacaaaga ggctaaggga 420
agaacgtctt gcacaatatg aatcaaacga aagccaaaaa acctgcactt gttgccaacg 480
tcttccatct tactagatgt gaaaccttgg gatgatgaga cagatatgcg cgaaattaca 540
ggagtgcggt cagaagcatt tcaagcanaa cggtttantc tggggctcat ntaacttagt 600

tccagngggg atacggaaat aaaaaaattt aaataccntg tgtaatttna aaangataaa 660
attggaacga attgctggag gaacaaatnc nggntttgag gncntgnccc ccatggatnt 720
ggttgtttta aaaaaacaaa ancctcnnga ctgggtttaa naaanatgaa gatanaaaaa 780
aaaaaggggg ccccctgggn gttttncnaa atncccccgg anngggggncg gcnccccccnt 840
ataanccncc cnggggccnt gagggataat ttagccggaa ggggttttta aaaanttttt 900
tatccgaaaa aanccct 917

<210> 22
<211> 798
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 99, 334, 343, 371, 428, 437, 462, 474, 486, 493, 505, 523, 537, 571, 572, 584, 590, 597, 603, 609, 614, 621, 622, 631, 639, 673, 682, 691, 699, 708, 710, 722, 723, 728, 737, 739, 747, 748, 762, 769
<223> n = A,T,C or G

<400> 22
ccttttttttt ttttttttaa tctttcgggg ttttatttaa atgccatgat ccaggatgga 60
ttttaaatct tgttgaaagc agccacatcc atggactgna catagtcctc aaaagcagtg 120
atctgctcct ccagcatatc tgttccaact ttatcatctt caactacaca ctgtatttga 180
agtttcttaa ttccgtatcc cactggaact agtttagatg agccccagac taagccgtct 240
gcttgaatgc ttctgacgca ctcctctaat ttcgcatatc tgtctcatca tcccaagggg 300
ttcacatcta gtaagatgga aagacttggg cacnagtgca ggnttttttgg gctttctttg 360
attcatattg ngccaagacg ttcttccctt accccttttgc ttcttcactt ttcctcctca 420
taatcccncc cccagangggc aatggcatca tcatctttac tntctggagc tccncttcct 480
ggaagngccc ttncccatcg ggcanggacc catatttgcc ccnagccttt ttttacntcc 540
tgggaagggt gggccttttt ttttttttccc nnaacttgga ttgnggattn tacccanccct 600
tangggggtnt gacncaaaat nnggaaaggc nggggggggnt ggaaacgggt tttaaaaact 660
gccccccctc ggncttgggg angggccaaa nacccccccna aaggaaantn tttggccccc 720
cnnggaanat gttggancnc cttggannngg gcgggagggg gntttttang ggtttccaaa 780
aaacaagggg ggggggggt 798

<210> 23
<211> 641
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 90, 92, 334, 338, 343, 349, 370, 400, 468, 481, 484, 505, 559, 621, 626
<223> n = A,T,C or G

<400> 23
gtcgacccgc gtgtgtgcgc ctaatctcag gtggtccacc cgagacccct tgagcaccaa 60
ccctagtccc ccgcgcggcc ccttattcgn tncgacaaga tgaaagaaac aatcatgaac 120
caggaaaaac tcgccaaact gcaggcacaa gtgcgcattg gtgggaaagg aactgctcgc 180
agaaagaaga aggtggttca tagaacagcc acagcagatg acaaaaaact tcagttctcc 240
ttaaagaagt taggggtaaa caatatctct ggtattgaag aggtgaatat gtttacaaac 300
caaggaacag tgatccactt tacaacccta aagnttangc atnttttgna gcgaacactt 360
tccccattan aggccatgct tgaaacaaag cagctgacan aaatgctacc cacatcttaa 420
ccacttgggg cggatagtct gctagtttaa ggagactggc cgaagctntg cccaaacaat 480
ntgngggatg gaaaagcccc ttgtnctgga gaggatgatg atgatgaagt tcccatcttg 540
gggagaattt tgatgaggnt tcaaaatgag gaactgaatt gagtcacttc tgaaataaac 600
ctgagaattc tgggagctgt nttttntatg ctgttttaaa a 641

<210> 24
<211> 773

<212> DNA
<213> *Homo sapiens*

<220>
<221> misc_feature
<222> 11, 16, 90, 91, 345, 348, 389, 393, 403, 420, 435, 446, 499,
524, 527, 563, 584, 592, 612, 636, 647, 651, 667, 675, 707,
709, 722, 738, 765
<223> n = A,T,C or G

<400> 24
gtcgacgctt ntccgntcct tctaggatct ccgcctggtt cggcccgcct gcctccactc 60
ctgcctccac catgtccatc agggtgaccn ngaagtccta caaggtgtcc acctctggcc 120
cccgggcctt cagcagccgc tcctacacga gtgggcccgg ttcccgcatc agctcctcga 180
gcttctcccg agtgggcagc agcaactttc gcggtggcct gggcggcggc tatggtgggg 240
ccagcggcat gggaggcatc accgcagtta cggtcaacca gagcctgctg agcccccttg 300
tcctggaggt ggaccccaac atccaggccc gtgcgcaccc agganaanga gcagaaccag 360
aaccttcaca accaagtttg gcttccttna tanacaaggg acnggtcctt ggagcaacan 420
aacaagatgc tgganaccaa gtgganccctt cttgcagcaa caaaaagacg gttcgaacaa 480
catggacaac atgttcgana gctacatcaa caaccttagg cggnaanttg gaaactctgg 540
gccaagaaaa acttaaactg gangcggagc ttggcaacat gcangggctg gnggaggact 600
tcaaaacaag tntgaggatg aaaatcaata agcgtncaga aatgganaac naattgtcct 660
catcaanaag gatgnggatg aagcttacat aacaaggaaa acttgantnt cccttggaag 720
gntgacccaa aaaaaaantt cttaggcaat tttttaaaaa gaaanccgga act 773

<210> 25
<211> 524
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 437, 470, 473, 483, 510
<223> n = A,T,C or G

<400> 25
tggccacgtc ggtctgggtg ttaagtggtc caaggaggtg gccaccgcca tccgtggggc 60
catcatcctg gccaagctct ccatcgtccc cgtgcgcaga ggctactggg ggaacaagat 120
cggcaagccc cacactgtcc cttgcaaggt gacaggccgc tgcggctctg tgctggtacg 180
cctcatccct gcacccaggg gcactggcat cgtctccgca cctgtgccta agaagctgct 240
catgatggct ggtatcgatg actgctacac ctcagcccgg ggctgcactg ccaccctggg 300
caacttcgcc aaggccacct ttgatgccat ttctaagacc tacagctacc tgacccccga 360
cctctggaag gagactgtat tcaccaagtc tccctatcag gagttcactg accacctcgt 420
caagacccac accagantct ccgtgcagcg gactcaggct ccaagctggn ggntacaaca 480
tangggtttt tatacaagaa aaataaaggn gaattaaggc gtga 524

<210> 26
<211> 595
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 15, 91, 362, 370, 415, 428, 444, 468, 511, 515, 523, 583,
585
<223> n = A,T,C or G

<400> 26
gtcaccgcag gatcnaggtg aaaaggagaa ccccatgcgg gaacttcgca tccgcaaact 60
ctgtctcaac atctgtgttg gggagagtgg ngacagactg acgcgagcag ccaaggtgtt 120
ggagcagctc acagggcaga cccctgtgtt ttccaaagct agatacactg tcagatcctt 180
tggcatccgg agaaatgaaa agattgctgt ccactgcaca gttcgagggg ccaaggcaga 240

agaaatcttg gagaagggtc taaaggtgcg ggagtatgag ttaagaaaaa acaacttctc 300
agatactgga aactttggtt ttgggatcca ggaacacatc gatctgggta ttcaaatatg 360
ancccagccn ttggtatcta cgggcctgga cttttttttg gggggcttg ggtanggcca 420
ggttttcncc attcgcaaaa caanaaagcc gcaagaacag gcttgcantt gggggcccca 480
aaccccagaa tcagcaaaag aaggaggccc ntgcncttgg ttnccaccaa aaagtattga 540
aggggatcct tcctttcctg gcaaaataaa atttcccgtt ttntnttccc aaaag 595

<210> 27
<211> 744
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 370, 378, 413, 571, 581, 602, 622, 637, 649, 650, 664, 675, 731, 734
<223> n = A,T,C or G

<400> 27
gcgtcgaccg cccgctcgct ctgaggctcc tgaagccgaa accagctaga ctttcctcct 60
tcccgcctgc ctgtagcggc gttgttgcca ctgcgccacc atgttcgagg cgcgcctggt 120
ccagggctcc atcctcaaga aggtgttgga ggcactcaag gacctcatca acgaggcctg 180
ctgggatatt agctccagcg gtgtaaacct gcagagcatg gactcgtccc acgtctcttt 240
ggtgcagctc accctgcggt ctgagggctt cgacacctac cgctgcgacc gcaacctggc 300
catgggcgtg aacctcacca gtatgtccaa aatactaaaa tgcgccggca tgaagattta 360
attcccttan ggcccaanat aacgcggata ccttggcgct agtatttgaa gcnccaaacc 420
aggaagaaag ttcaaactat gaaatgaagt tgatggatta gatgttgaac aacttggaat 480
tccaaacagg agtacagctg tgtaataaag atccttctgg gggaatttgc acgtatatgc 540
cgaaactcag ccatattgga gatgcttgtg naatttcttg ngcaaaaaac ggatgaaatt 600
tntgaaggga aaacttggaa angaacatta attggcncaa caatatggnn ataaaaagag 660
gaanttgttc catanaaaga aagacccttc actactttgg ctgggggcct gaatttttaa 720
aacccccctt nttnacggaa ctaa 744

<210> 28
<211> 606
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 243, 282, 288, 331, 334, 385, 423, 444, 446, 459, 470, 479, 480, 491, 493, 520, 529, 532, 538, 541, 546, 552, 582, 592
<223> n = A,T,C or G

<400> 28
tttttttttt ttttttgaaa tgggggtaac tttatttaaa ttcaaaaaca attcttaaaa 60
ctgcatttag agtcaagacc cttttgtatt ataaaaatca caagtatttc taagagacaa 120
aaatacttct aggttaacta gaccagatct gactttggac tttattcttt aaacaaattg 180
cagagaatag agaaaaaaat aggttattta cagaaaacaa tatctacata tgtacttaga 240
ggnacaaatt tggtgacaga aaagacttca gtatatgctg gntcttanaa gccggtctcc 300
aagaagctaa gtttatttct tggattttaa naangcctaa aaccctttttt catcctcgac 360
ttgggagcca agtaatattt taagngcccc atatccccaa ttttatactc tacaacaagg 420
ggnacatctg cagacatact gagngncacc cgttgaaana aagggggagn ggcttttgnn 480
aagaaagtca ngnaccctca ggccaaaagt tagttgaacn ggtcattcnt tntatggnac 540
ngcttnctcc cntttatcga catactggcc tggacaattt anggttcctt tnccagtctc 600
ccttca 606

<210> 29
<211> 649
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 22, 25, 267, 280, 294, 296, 301, 304, 322, 434, 455, 456,
504, 550, 574, 576, 577, 588, 594, 631, 647
<223> n = A,T,C or G

<400> 29
cggaacccgg cgctcgttcc cnggnccggc cggccgccca tagccagccc tccgtcacct 60
cttcaccgca ccctcggact gccccaaggc ccccgccgcc gctccagcgc cgcgcagcca 120
ccgccgccgc cgccgcctct ccttagtcgc cgccatgacg accgcgtcca cctcgcaggt 180
gcgccagaac taccaccagg actcagaggc cgccatcaac cgccagatca acctggagct 240
ctacgcctct acgtttacct gtcatgnctt actactttgn ccggcaataa tgtngntttt 300
naanaacttt gccaatactt tnttaccaat ctcatgagga gagggaacat gctgagaaac 360
tgatgaactg cagaccaacg aggtggccga atcttcttag gatatcaaga aaccagactg 420
tgatgactgg agancggctg aatgcaatgg agtgnnatta catttgaaaa aatgtgaata 480
agcactactg actgccaaat ggcnctgaca aaatgacccc attggggatt cttgaaccat 540
actgatgagn gggaagcctc aaaaatgggt gacncnnacc attggcanat gganccccgaa 600
ttggttgcga aattttgcag ccccctggag naggtatgaa gtaactngg 649

<210> 30
<211> 707
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 18, 91, 93, 348, 451, 517, 555, 593, 693, 706
<223> n = A,T,C or G

<400> 30
gcgtcgactt tttttttnca ctacaatagt taattttatt tgttcaagag ctcagattgc 60
aagcattaaa ccaagcatag gctttgattc ngngagccca aattcacata ttgaagaaga 120
tcaaagcaaa ctgtgatcca tgtacatgga tgaaaactaa aggctcgagt taatcacatt 180
gtagttttta aatttctaca gcctagagct cactagtcac aggtctttta ggtccttctg 240
gatgtcccac agggtatctg cacttttctt gagctgagca acctcatcat cctttagctt 300
ctggttgata acgctggtta atccccgggc attgaggata catggaangc tcaagaagac 360
ttcattctca atgccataca tccccttacc atggtgaccc cgggatgaat ccttggatag 420
attttcaaca tggattcaat aagatcagcc ncacttaatc caatagccca gttggtatat 480
ccttttagct tgatgacttc ataggcactt tcaaccncca tcttatgcac ttccttccaa 540
ttttcctatc attgncagtt cccatttctg gattcaattc ctggagagaa acnccctgcc 600
acattcacac ccttcacaca gccacacttg agtcgccatg ttccccaaaa tccttcatgg 660
cactgctggg aagaagccaa gttttcacct tanggagcga atttanc 707

<210> 31
<211> 683
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 24, 305, 306, 338, 355, 363, 401, 403, 465, 480, 551, 563,
572, 581, 599, 608, 612, 627, 629, 639, 679
<223> n = A,T,C or G

<400> 31
ccggaggaga cgcacgcagc tggntttgtc ttctccgcac gactgttaca gaggtctcca 60
gagccttctc tctcctgtgc aaaatggcaa ctcttaagga aaaactcatt gcaccagttg 120
cggaagaaga ggcaacagtt ccaaacaata agatcactgt agtgggtgtt ggacaagttg 180
gtatggcgtg tgctatcagc attctgggaa agtctctggc tgatgaactt gctcttgtgg 240
atgttttgga agataagctt aaaggagaaa tgatggatct tgcagcatgg gagcttattt 300
cttcnnacac ctaaaattgg ggccagataa agaattantt cttgtgaccg ccaanttctt 360
aanaaattgta agtgggtaac ttgccaggga agtcccctcc ngncaaaaaa aggggaaaag 420

ttcggcttca aatcttgggt gccaaaagaa aatggtttaa atggnctttc aaaatttcan 480
ttatttcctc aaaatccgtc caaagtaccc agtcccttga atttggcctt cattaaattg 540
gggggtttt ncccaacccc agnggggacc anttctttac ntaatggttt acccttggna 600
aaacttanag tngggattac cccaaancnc ccccgtggna tttggaaaag ggggatgtaa 660
atccgggatt tctgcttana att 683

<210> 32
<211> 637
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 28, 242, 248, 251, 265, 334, 502, 564, 628, 631
<223> n = A,T,C or G

<400> 32
gcgcctcgga ggcgttcagc tgcttcanga tgaagctgaa catctccttc ccagccactg 60
gctgccagaa actcattgaa gtggacgatg aacgcaaact tcgtactttc tatgagaagc 120
gtatggccac agaagttgct gctgacgctc tgggtgaaga atggaagggt tatgtggtcc 180
gaatcagtgg tgggaacgac aaacaaggtt tccccatgaa gcagggtgtc ttgacccatg 240
gncgtgtncg nctgctactg agtangggc attcctgtta cagaccaagg agaactggag 300
aaagaaagag aaaatcagtt cgtggttgca ttgnggatgc aaatctgagc gttctcaact 360
tggttattgt aaaaaaagga gagaaggata ttcctggact gactgatact acagtgcctc 420
gccgcctggg ccccaaaaga gctagcagaa tccgcaaact tttcaatctc tctaaagaag 480
atgatgcccc cagtatgttg tnagaaagcc ccttaaataa agaaggtaag aaacctaggg 540
acccaaagca cccaagaatt cagnggcttt gttactccac gtggtctgca gcacaaaccg 600
ggggggtat ttgctcttga agaaacancg nacccaa 637

<210> 33
<211> 675
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 24, 93, 387, 390, 418, 549, 563, 575, 577, 585, 594, 667,
673
<223> n = A,T,C or G

<400> 33
gcgcgacaca gtagcatttg tgcnaatttc tggttggaat ggtgacaaca tgctggagcc 60
aagtgctaac atgccttggt tcaagggatg ggnggggtca cccgtaagga tggcaatgcc 120
agtggaacca cgctgcttga ggctctggac tgcatcctac caccaactcg tccaactgac 180
aagcccttgc gcctgcctct ccaggatgtc tacaaaattg gtggtattgg tactgttcct 240
gttggccgag tggagactgg tgttctcaaa cccggtatgg tggtcacctt tgctccagtc 300
aacgttacaa cggaagtaaa atctgtcgaa atgcaccatg aagctttgag tgaaactttt 360
tctggggaca atgggggctt taatgcnaan aatgtgtctg tcaaaggatg ttcgtcgngg 420
caaccgttgc ttggtgacag caaaaatgac ccccaatgga agcaagcttg gcttccttgc 480
tcaaggggat tatcctgaac catccagcca aataagcgcc ggctatgccc tgtattggat 540
tgcccacgnt tacattgcat gcnagtttgc tgacntnaag aaaanatgat cgcngtctgt 600
aaaaactgga aaaggcctaa ttttgaatct gggatgtgca ttgtgatatg gtctgcaacc 660
catgtgngtg aantt 675

<210> 34
<211> 684
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 89, 92, 122, 123, 295, 320, 322, 352, 355, 361, 369, 375,

382, 384, 386, 389, 409, 411, 413, 414, 415, 421, 440, 445,
448, 453, 461, 500, 510, 528, 532, 537, 546, 547, 563, 564,
569, 577, 583, 587, 597, 598, 599, 609, 613, 616, 621
<223> n = A,T,C or G

<221> misc_feature
<222> 622, 627, 648, 681
<223> n = A,T,C or G

<400> 34
gtcgactttt tttttttttt ttttttattt gaaatacaac tttattctga ttctaaacga 60
aaaggaatgg gaatgacagt aacaaacang gnttcaccac tgaatattgt gatgtgactg 120
cnncagtctt atatatgaaa ctcaaggaat caactgcgtt ccaaaacagc taaatatgca 180
ggtccaaaca atgaagttat tttttaaact gccacattca ctccgaagcc cactcatctc 240
cttcagcatc ccacagatga agcacatgtt ccgcttagct agataataat gaggnggcac 300
acacgctgca cccgctgacn tnccaggaca ggctgcctat aaaactagaa cnttntgacc 360
ntggcctcna gcttnatttc tnancnggng cattatcctc ttccgggana ncnnnttggt 420
ntgaaccacc tctaagtccn gctcnttnct tgngcttgcc naagctgggg gcccatgacc 480
accttttggg gggggccaan agccaggccn ttgccaacaa attccccngt tnagggnccc 540
catggnnctt cctaccaagc ccnnaggang ggctttncaa agntggngtt cttttgnnna 600
aatgtccana ctnaanattt nntttcnggg gacaaaacgg agtccccntc ctttcctgcc 660
taaaacccct ttgtgccccc nccc 684

<210> 35
<211> 720
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 24, 238, 285, 318, 335, 343, 354, 355, 359, 378, 398, 435,
440, 441, 445, 448, 456, 473, 487, 501, 516, 520, 527, 587,
623, 624, 630, 633, 637, 639, 643, 644, 650, 657, 662, 673,
706
<223> n = A,T,C or G

<400> 35
cgcggagacg cttctggaag gagngccgcg atggctgcgc agggagagcc ccaggtccag 60
ttcaaacttg tattggttgg tgatggtggt actggaaaaa cgaccttcgt gaaacgtcat 120
ttgactggtg aatttgagaa gaagtatgta gccaccttgg gtgttgaggt tcatccccta 180
gtgttccaca ccaacagagg acctattaag ttcaatgtat gggacacagc cggccagnag 240
aaattcggtg gactgagaga tggctattat atccacccaa tgggnccttc taatgttgat 300
gaaccatcaa cagttacnta ccagaatgtg cctanctggc atnagaaatc tggnnccang 360
tgtgtgaaaa catccccntt gtgttgtgtg gcaacaangt ggatattaag gacaggaaag 420
tgaaggcgaa atccnttggn nttcnccnaa agaaanaatc ttcctccttc canctttct 480
gccaaanagt aacctaccac ntttgaaaaa gccctntccn tttggcntgc ttagggaagc 540
cttcattgga aaacccttaa cttgggaatt tgtttgccct gccctgnttt cccccccccc 600
aaaagttttc catgggaccc ccnnttttgn ccncccnant ttnnagcccn actttanaag 660
gnttggttca aanaaacttg gtttttcccg gattgaaggg atagantacc cctttgaaaa 720

<210> 36
<211> 422
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 41, 44, 51, 74, 79, 88, 104, 120, 123, 131, 161, 168, 183,
184, 187, 192, 206, 219, 220, 221, 240, 246, 247, 255, 257,
265, 279, 282, 290, 304, 322, 334, 340, 343, 353, 358, 365,
368, 384, 419

<223> n = A,T,C or G

<400> 36
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tcattttttt taaaggcatc atggcttttc tctttattta ngcnataaat ntatcttgag 60
ccttttttacc gggncttana ttctagcnac tggttttatt agcnggtaca actaccaaan 120
aangactttt nattgtatca cacactaacc atgcctttta ntttaaantt ttatggatca 180
tannttntaa tnttaaccat aaaggnatag ctatatccnn nccatgggta ctcccatttn 240
ttatanncaa ttatncnatg catanactta tccattggnc cnctgaaagn aaagaatgtt 300
gganttgtca gggaaagacc angaacccct tggnaacacn ccntaatgaa acnatgcnat 360
gggtngcngg gacccatcct tgtnttccat ggccaaaaaa caatggttga atttttgtnc 420
ca                                                                422
```

<210> 37
<211> 1053
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 671, 684, 745, 746, 747, 748, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 799, 803, 814, 827, 831, 837, 840
<223> n = A,T,C or G

<221> misc_feature
<222> 843, 844, 870, 900, 908, 909, 910, 929, 933, 938, 949, 966, 967, 977, 978, 979, 982, 984, 986, 987, 993, 994, 1023, 1042
<223> n = A,T,C or G

<400> 37
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cggcgcgggg ctgaaggcta gcaaaccgag cgatcatgtc gcacaaacaa atttactatt 60
cggacaaata cgacgacgag gagtttgagt atcgacatgt catgctgccc aaggacatag 120
ccaagctggt ccctaaaacc catctgatgt ctgaatctga atggaggaat cttggcgttc 180
agcagagtca gggatgggtc cattatatga tccatgaacc agaacctcac atcttgctgt 240
tccggcgccc actacccaag aaaccaaaga aatgaagctg gcaagctact tttcagcctc 300
aagctttaca cagctgtcct tacttcctaa catctttctg ataacattat tatgttgcct 360
tcttgtttct cactttgata tttaaaagat gttcaataca ctgtttgaat gtgctggtaa 420
ctgctttgct tcttgagtag agccaccacc accatagccc agccagatga gtgctctgtg 480
gacccacagc ctaagctgag tgtgacccca gaagccacga tgtgctctgt atccagaaca 540
cacttggcag atggaggaag catctgagtt tgagaccatg gctgttacag ggatcatgta 600
aacttgctgg ttttggtttt tcctgccggg tgttgtatgt gtggtgactt gcggatttat 660
gtttcaagtg nactggaaac tttncatttt attcaagaaa tctggtcatt ggttaaaagc 720
cttgattaaa gaggaagttt ttttnnnnaa nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 780
nnnngggggg ggccgttcna atntaaaagg gccngtttaa acccccntga ncccccnccn 840
aannggggccc tttttatttg ccccccccttn ttttggtttg ggcccctccc cccgggggcn 900
tttttttnnn ccctgggaag ggggccccnc ccnctggnct ttttttttana aaaaaagggg 960
gaaaannccc cccccttnnnt tngngnnggg ggnntttttt ttttgggggg gggggggggg 1020
ggngggcccc ccgggggggg gnggggaaaa aaa                              1053
```

<210> 38
<211> 449
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 21, 22, 211, 259, 277, 280, 299, 328, 375, 384, 417, 448
<223> n = A,T,C or G

<400> 38

cggcccagat tgctgtggct nntgcctgta atctcagcct gagactgatg atttaaaggc 60
acattaacac accaatctgg gccgaaggat agtatttgct aatgtggctt ctctctcatg 120
aaagacacag cctactctta gtctctgaag aggccagggt tgccactgct cctctgtttc 180
caccccagta tcagagggag tccctaccta nagagaatct taaacattca tagccatact 240
ctcaatggat attaagggnt tattatgtgc aaattgncan agtaactggc ataagtgana 300
catcttagat tatttctcta aggcattnta gtttcctcct ggcacctgaa tctggctcat 360
taatctagaa tcttnccaag aaanagctag actaaattat agtcatacag cgctcantgg 420
tgggaataca ttctgagaaa tgcattgna 449

<210> 39
<211> 651
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 579, 608, 628
<223> n = A,T,C or G

<400> 39
gccagggcgc aggcacatct gttggttctc aggcctcaga taaaaccatc tccgcatcat 60
atggccagtg accgctttct cccttcaaga aaattctgtg gctgtgcagt actttgaagt 120
tttaattatt aacctgcttt aattaaagca gtttcctttc ttataaagtg gaatcaccaa 180
atcttatcac acagagcaca gtcctgtagt tacccagccc gctccagcag tgcgggagat 240
tgtaaggaag cggtggcggc tggtgaagca agtctcacat gtcggcgttc ttggccaatg 300
gatacaaaga taaagaaaat gttgcctttt tctaggaact gtcagaaatc ctcatgcctt 360
tcaagacttc tgtgaatgac ttgaattttt tattccctgc ctagggtctg tgaacgaggc 420
ctgtctcttc cctggggttt ctttccatgg cctttatttc tcctcttcca gtgggagttt 480
tgcaggctct tctctgtgga aacttcacga gcggtggctg ggcctcggct tcgctggagg 540
gactcaaggg gaaaggagag tgggattgag accaggtang gacgaccagc tgagaaagga 600
cgttcatnat ttacagggcc ctccccanga attacttacc cgacccacct t 651

<210> 40
<211> 854
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 243, 399, 405, 411, 417, 471, 521, 540, 597, 635, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673
<223> n = A,T,C or G

<221> misc_feature
<222> 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 697, 703, 730, 731, 734, 735, 738, 739, 744, 781, 788, 798, 802, 815, 839
<223> n = A,T,C or G

<400> 40
ggcgcttcgg gagccgcggc ttatggtgca gacatggcca agtccaagaa ccacaccaca 60
cacaaccagt cccgaaaatg gcacagaaat ggtatcaaga aaccccgatc acaaagatac 120
gaatctctta aggggtgga ccccaagttc ctgaggaaca tgcgctttgc caagaagcac 180
aacaaaaagg gcctaaagaa gatgcaggcc aacaatgcca aggccatgag tgcacgtgcc 240
gangctatta aggccctcgt aaaagcccaa ggaggttaag cccaagatcc caaagggtgt 300
cagcccgcaa gctcgatcga cttgctacat tgccacccca agcttgggaa gcgtgctcgt 360
gcccgtattg ccaagggct caagctgtgc cggccaaang ccaanggcaa nggcaangcc 420
aaggatcaaa ccaaggccca ggctgcagcc ccagcttcag ttccagctca ngcttccaaa 480
cgtacccagg cccctacaaa ggcttcagag tagatatctt ntgcaacatg aggacagaan 540
gactggtgcg accccccccc ccgccctggg ctaccatctg atggggctgg ggtcctnctg 600

tgctatttgt acaaataaaa ccttgaggca ggganannnn nnnnnnnnnn nnnnnnnnnn 660
nnnnnnnnnn nnnnnnnnnn nnnnnnnngg gggggcnctt canttttaa ggggcccgtt 720
ttaaaccccn ntgnntannc ctcnattggg gcttttttt ttgccaccct ttttttttt 780
ngcccctncc ccggggcntt tntttttccc ttggnaaggg ggccccttcc cccttttcnt 840
tttttaaaa aaaa 854

<210> 41
<211> 497
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 493, 497
<223> n = A,T,C or G

<400> 41
cgcaagatgg cgccgcagaa agacaggaag cccaagaggt caacctggag gtttaatttg 60
gaccttactc atccagtaga agatggaatt tttgattctg gaaattttga gcaatttcta 120
cgggagaagg ttaaagtcaa tggcaaaact ggaaatctcg ggaatgttgt tcacattgaa 180
cgcttcaaga ataaaatcac agttgtttct gagaaacagt tctctaaaag gtatttgaaa 240
taccttacca agaaatacct taagaagaac aatcttcgtg attggcttcg agtggttgca 300
tctgacaagg agacctacga acttcgttac ttccagatta gtcaagatga agatgaatca 360
gagtcggagg actaggcaaa ggctcccctt acagggcttt gcttattaat aaaataaatg 420
aagtatacat gagaaatacc aagaaattgg cttttagttt atcacgtgaa taaaaaatat 480
tatactcttg acncccn 497

<210> 42
<211> 774
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 656, 663, 685, 716, 724, 734, 773
<223> n = A,T,C or G

<400> 42
ctttccagcc tcagtcggac gggcgcggag acgcttctgg aaggaacgcc gcgatggctg 60
cgcagggaga gccccaggtc cagttcaaac ttgtattggt tggtgatggt ggtactggaa 120
aaacgacctt cgtgaaacgt catttgactg gtgaatttga gaagaagtat gtagccacct 180
tgggtgttga ggttcatccc ctagtgttcc acaccaacag aggacctatt aagttcaatg 240
tatgggacac agccggccag gagaaattcg gtggactgag agatggctat tatatccaag 300
cccagtgtgc catcataatg tttgatgtaa catcgagagt tacttacaag aatgtgccta 360
actggcatag agatctggta cgagtgtgtg aaaacatccc cattgtgttg tgtggcaaca 420
aagtggatat taaggacagg aaagtgaagg cgaaatccat tgtcttccac cgaaagaaga 480
atcttcagta ctacgacatt tctgccaaaa gtaactacaa ctttgaaaag cccttcctct 540
ggcttgctag gaagctcatt ggagacccta acttggaatt ttgttgcctg ctgctctcgc 600
cccaccagaa gttggcattg ggaccccagc ttttggcagc ccactattga gcacgnactt 660
aanaaggttt ggctcaagac caacntggct tcttccccgg gaatgaaagg gattgnattg 720
gacncctggt ggcnagaaaa ttgaaaagct ttggggaagg ccccccactc cgnt 774

<210> 43
<211> 651
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 510, 546, 568, 580, 627, 641
<223> n = A,T,C or G

<400> 43
atcgccgggc cctcccggtt ccccgggcca agcacacgcc gaacgggaag acgcgcgcgg 60
cggccgaact ggcccctcaa ctcctcgcag gggcggaggt gggtaaagag agaaaagtcc 120
ccaaaagatt tggggaagga gttctccgcc tctcgcagag gagttatagt tcccaggctg 180
gagagtctct ctctccctct ctctcgctct ctcaccgcgc tgcagtttgc tgtctctcgg 240
ctgagtctgg agaccgtgct aaagtagaga ggagtttctc gaatgctggt tgctgaagct 300
tccaatgcaa gtttctcgcg gcctcccagg caagtctttt tttttttttt tctttttccc 360
tgaagcagtt gattccagtt cacgagcgct ctcggtagct caggaaagcg acatagtctc 420
tagcacttag tccctctcct acaatgcaaa gcaaaaaaga ctgtggctcc aggactctct 480
gtgggcggaa tcggcactaa ggagttgggn gcaattattt tgttgcaagg gagggaagcc 540
aaaaangcct gcatgcaaca gactgggnat gaataaatgn atgttttccc cccccttct 600
gcaaaaaagg gagctgggaa tgggcangga atttcttcca ngggcaaact t 651

<210> 44
<211> 327
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 250, 268, 292, 309
<223> n = A,T,C or G

<400> 44
ggggaagagg cctgtttcgc tggcgggtct ctatttcttg cacgctcttt aagagtctgc 60
actggaggaa ctcctgccat taccagctcc cttcttgcag aagggagggg gaaacataca 120
tttattcatg ccagtctgtt gcatgcaggc tttttggctt cctaccttgc aacaaaataa 180
ttgcaccaac tccttagtgc cgattccgcc cacagagaag tcctggagcc ccagtctttt 240
ttgtttggcn tggtaggaaa ggactaangg ctaaaaactt tgtcgctttc cngactaccg 300
aaagcgctng ggaactgaaa tcaactg 327

<210> 45
<211> 715
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 197, 420, 430, 515, 565, 571, 587, 589, 591, 621, 622, 623,
627, 637, 638, 639, 640, 644, 647, 655, 658, 685, 703
<223> n = A,T,C or G

<400> 45
ctacaagacg ctacttcccc tatgatagaa gagcttatca cctttcatga tcacgccctc 60
ataatcattt tccttatctg cttcctagtc ctgtatgccc ttttcctaac actcacaaca 120
aaactaacta atactaacat ctcagacgct caggaaatag aaaccgtctg aactatcctg 180
cccgccatca tcctagncct catcgccctc ccatccctac gcatccttta cataacagac 240
gaggtcaacg atccctccct taccatcaaa tcaattggcc accaatggta ctgaacctac 300
gagtacaccg actacggcgg actaatcttc aactcctaca tacttccccc attattccta 360
gaaccaggcg acctgcgact ccttgacgtt gacaatcgga gtagtactcc cgattgaagn 420
ccccattcgn ataataatta catcacaaga cgtcttgcac tcatgagcct gtccccacat 480
taggggttaa aaacagatgc aattgccggg acgtntaaaa ccaaaccact ttcaccgcta 540
cacgaccggg gggtatacta ccggncaatg ntctgaaatc tgggggngna naccacagtt 600
tcatgcccat cggccctata nnngatnccc ctacaannnn ttgnaantag ggccncgnaa 660
tttacccta taggcacccc ccttntaccc cccctctaag agnccaaaaa aaaaa 715

<210> 46
<211> 705
<212> DNA
<213> Homo sapiens

<220>

<221> misc_feature
<222> 2, 332, 594, 603, 636, 641, 667, 703
<223> n = A,T,C or G

<400> 46
tnccatggcg gctgggaccc tgtacacgta tcctgaaaac tggagggcct tcaaggctct 60
catcgctgct cagtacagcg gggctcaggt ccgcgtgctc tccgcaccac cccacttcca 120
ttttggccaa accaaccgca cccctgaatt tctccgcaaa tttcctgccg gcaaggtccc 180
agcatttgag ggtgatgatg gattctgtgt gtttgagagc aacgccattg cctactatgt 240
gagcaatgag gagctgcggg gaagtactcc agaggcagca gcccaggtgg tgcagtgggt 300
gagctttgct gattccgata tagtgccccc anccagtacc tgggtgttcc ccaccttggg 360
catcatgcac cacaacaaac aggccactga gaatgcaaag gaggaagtga ggcgaattct 420
ggggctgctg gatgcttact tgaagacgag gacttttctg gtgggcgaac gagtgacatt 480
ggctgacatc acagttgtct gcaccctgtt gtggctctat aagcaggttc tagaaccttc 540
tttccgcagg cctttcccaa taccaacccg ctgggttctc actgcattaa ccanccccag 600
ttncgggctg tcttgggcga agtgaaactg tgtganaaga nggcccaatt tgatgctaaa 660
aagttgnaga gaccccacct aaaaggacac ccaccggaaa ganaa 705

<210> 47
<211> 945
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 29, 132, 182, 221, 304, 379, 395, 436, 463, 477, 582, 636, 638, 655, 677, 709, 730, 742, 744, 747, 784, 786, 787, 791, 805, 822, 823, 866, 869, 872, 877, 888, 935, 938
<223> n = A,T,C or G

<400> 47
cctttttttt ttttttgtc ctaaattgnt tattaagtat gaattttaca aactttactt 60
atattagcgg taacggtgga gctggagagt attgcgcctt ctccaagctg cccggcgaga 120
gccaccaata gngtggtgga acttgtggcc ctttccaagg ccacggctct ttcggcctgc 180
angatgtcag cccacgcatc tccctgtgct tgtggactgg nttggtgatc cactgggtgt 240
caggatttct tctgatagct ttatggaatg gatcaatgag gataacctca aaaaatttgt 300
atgnggaatc ttcaccaacc cagaagaatt cacgactctc agagccccac agtggcgtcc 360
agctcgctcc tctgcaacng actgaaggct tcgancaaac tttagctggt taacaccatg 420
atggacaggc ttgccntaag ttgcaccctt aggaactggg cgntttcggc caccacnggc 480
gaacacgaat cctatatata acgtaacctt gcttggcctt gtagcccagt cggcgccgct 540
ttatcaagcc gggtggggcg gggagccctg tggagagcag anagcttggc ggtactgcca 600
gcagcggacc ctcagaagaa agcgcatgac atcaanantg cttctttctc catancttct 660
ggatgtactt ggatgcnccc atcttggctt acctgatggc tgccgccana ccggaaaagg 720
aaagtccacn ccgggccgct cnanttntaa gaaggccccg ttttaaaccc cgctgaacca 780
gccntnnacc nggggccttt ttaanttgcc aggcaatctt gnntgttttg gcccctcccc 840
ccgggggccc tttcccttga cccctnggna anggggnccc cttccccnct ggggcctttt 900
ccctaaataa aaaaaggagg ggaaaattgc cattnccnca tttgg 945

<210> 48
<211> 135
<212> DNA
<213> Homo sapiens

<400> 48
cctcgcccgt cacgcaccgc acgttcgtgg ggaacctggc gctaaaccat tcgtagacga 60
cctgcttctg ggtcggggtt tcgtacgtag cagagcagct ccctcgctgc gatctattga 120
aagtcagccc tcgac 135

<210> 49
<211> 143
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 2, 36
<223> n = A,T,C or G

<400> 49
cngtcgacgt cgagggctga ctttcaatag atcgcngcga gggagctgct ctgctacgta 60
cgaaaccccg acccagaagc aggtcgtcta cgaatggttt agcgccaggt tccccacgaa 120
cgtgcggtgc gtgacgggcg agg 143

<210> 50
<211> 415
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 29, 176, 244, 259, 377, 387
<223> n = A,T,C or G

<400> 50
cctttttttt ttttttttc aggttaagna ataaaaattt attgagaatt cctgggttgg 60
tgtttatctc ctcccagcct tgagggaggg aacaacactg taggaaatca ctgagaaatc 120
acgcactgtc cccaacagcc ccagttaaca cagggaggag gaaagtaatt ccccanaaaa 180
ggggctagtc ttcagtcttc cttaatccaa gaggggttca gggaaccggt gtgggggacc 240
atcncatgat actggggcng gggtagggct gtgctggacc cctggctggc tcctcaaaaa 300
ctggagaagc agatccactt cctctggggg tggagttctt ggtgactagg ctcatttctt 360
acccttgatg aggctgncac ttccccnggt gaaactttca tcctgtaggt tcagc 415

<210> 51
<211> 573
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 21, 55, 77, 92, 99, 103, 116, 217, 243, 249, 253, 290, 312,
314, 317, 324, 325, 367, 382, 402, 448, 449, 480, 491, 497,
534, 560
<223> n = A,T,C or G

<400> 51
tttttttttt tttttgtaaa nctctgccat aaacttctag cgtgtgccaa tggtnacctg 60
ccacactcgc accaggntgt ccgtgtagcc ancaaacana gtntggccat cagcanacca 120
ggccagggag gtgcactggg gtggttctgc cttgctgctg gtactgataa cttcttgctt 180
cagttcatct acaatgatct ttccctctaa atcccanatc ttgatgctgg ggcctgtggc 240
agnacacanc cantagcggt tagggctgaa gcacagggcg ttgatgatgn ccccaccatc 300
tagcgtgtaa angngtntgc cttnnttgag atcccataac atggcctggc catccttgcc 360
tccagangca cagagggatc cntctggaga gacagtcacc gngttcatat agcctgtgtg 420
gccaatgtgg ttggtcttca gcttgcannt atgccagggt ccataccttg accagcttgn 480
cccagccaca ngagacnatg atagggctgc tgctgttggg cgaaaaacgg gacncaagac 540
acccactctt gaggtggggn tctcattcct tgg 573

<210> 52
<211> 770
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 413, 449, 523, 578, 582, 604, 640, 649, 653, 656, 671, 683,

694, 718, 723, 741
<223> n = A,T,C or G

<400> 52
tgcaaggcgg cggcaggaga ggttgtggtg ctagtttctc taagccatcc agtgccatcc 60
tcgtcgctgc agcgacacac gctctcgccg ccgccatgac tgagcagatg acccttcgtg 120
gcaccctcaa gggccacaac ggctgggtaa cccagatcgc tactaccccg cagttcccgg 180
acatgatcct ctccgcctct cgagataaga ccatcatcat gtggaaactg accagggatg 240
agaccaacta tggaattcca cagcgtgctc tgcggggtca ctcccacttt gttagtgatg 300
tggttatctc ctcagatggc cagtttgccc tctcaggctc ctgggatgga accctgcgcc 360
tctgggatct cacaacgggc accaccacga ggcgatttgt gggccatacc aangatgtgc 420
tgagtgtggc cttctcctct gacaccggna gattgtctct ggatctcgag ataaaaccat 480
caagctatgg aataccctgg gtgtgtgcaa atacactgtc cangatgaaa gccacttcag 540
agtgggtggt ctttgtgtcc cgctttttcc cccaacangc angcaaaccc cttattcatt 600
cggncttcct tgtggggctt ggggaacaaa agcttgggtn caaaagggna ttnggnaaac 660
ccttgggctt naacttggca aanggcttgg aaangaaccc aaaccccccc ttttgggncc 720
cancaaccaa gggctttttt ntttgaaaac aaccgggggg gaacttgggt 770

<210> 53
<211> 484
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 280, 477, 483
<223> n = A,T,C or G

<400> 53
atggtggagc agggtccgag ccacgtcctg cagggcacgt ctggggcatt tcctgttttg 60
tggtaggaaa tgtccctgac ctttcagaac cgaacccaat cctgaggctg actcctctac 120
ggaaaatgag gacaggacgg gggtgaggga atgagagtgg gaggtccctg cacctcctcg 180
cccggctcct caggaagaaa accgctggcc cttcccgagt gtgccggccg agggccgagg 240
gccgtgcaca tggggagagg gcgtcagcct gatggctgan cttttaaatg tcatcatcat 300
aacattattt atttaaatgt agttattttg gtatttaatt ttttttagag aggaaaaaac 360
ctgtattttc ctggtgggat gaaataggga tgaaaatggc tcagaatggt atatttaggc 420
aattttaaaa catttattat ttacataaag accaaatatg atgaaatctg ttcccgngaa 480
ttng 484

<210> 54
<211> 924
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 307, 425, 452, 467, 492, 503, 518, 524, 545, 555, 570, 574,
596, 604, 609, 614, 619, 625, 626, 654, 655, 657, 668, 670,
678, 694, 715, 716, 725, 728, 742, 745, 757, 761, 767, 768,
769, 783, 792, 793, 802, 803, 812, 819, 825, 831, 836
<223> n = A,T,C or G

<221> misc_feature
<222> 837, 838, 839, 841, 847, 848, 854, 855, 856, 864, 865, 868,
869, 870, 871, 874, 886, 903
<223> n = A,T,C or G

<400> 54
ttttttttta aaattaataa aaatatttta ttgaatttca ggaacttggt actttttaa 60
aacttcaaat ctttgcacac aaatcaccac tatactttct agaatagtgg aagttaggac 120
ttcaagattg tcacttatct ccttgtgtca cacagcacag aaaccccaag tcctcacact 180
gcccccaccc cccttctggc catgactacc aactactctg ttattctagc ggaggacaat 240

gacggaagtg ggtagacgac tgaagggaga tcagctgtca cccgcgtctc tactaaagtg 300
agaggangag caacccgagg atcatgccgc acacctctga gtgcccacgt gacgtgggtc 360
ataccggaag ttcctttgg tttctcggtt gggtcagggc aaaactactg aaaattggtc 420
ctagncctga gggactcaga agttgggcaa anggcacagc agacttnctg aaaagccgac 480
cctggaggaa cnccagtgga gangcgggga gttcacangc gacncaactt gaaggaccac 540
cccangaacc ccttncccaa aggggctgn aagnttccag cacccagggg gccaangggg 600
ttgnggggna acancaaant tcaannaacc cctttggttg gggttcaaag tttnntnggg 660
ggattccnan gccttaantt ccaaaaaatt ttanaaaaac aaggggccct taaannaacg 720
gggcnaanaa aaaaaccccg gnggnggggg ggggccngcg ncccccnnnt gggggggggg 780
ggncccggcc cnnccccctt cnnaaaattt tnttaaaant ccccngggg ncccccnnnng 840
naaaaanncc ccannngaaa cccnnggnnn naangggggg gggggnaacc gggggcgggg 900
ggncccccctt cccttttgg gaaa 924

<210> 55
<211> 1078
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 23, 24, 57, 336, 393, 408, 442, 447, 450, 454, 467, 471,
483, 513, 518, 534, 539, 549, 553, 560, 567, 637, 644, 655,
665, 667, 679, 690, 703, 721, 726, 734, 743, 762, 779, 828,
829, 846, 851, 852, 863, 869, 876, 902, 948, 957, 968
<223> n = A,T,C or G

<221> misc_feature
<222> 974, 982, 986, 990, 998, 1012, 1016, 1018, 1021, 1022, 1042,
1048
<223> n = A,T,C or G

<400> 55
gcatctgaaa cgggtgggag ctnnttagca ttggatgctg gataaattga ccggggngtt 60
tgctcctcgt ccatccaccg gtccccacaa gttgagagag tgtctccccc tcatcatttt 120
cctgaggaac agacttaagt atgccctgac aggagatgaa gtaaagaaga tttgcatgca 180
gcggttcatt aaaatcgatg gcaaggtccg aactgatata acctaccctg ctggattcat 240
ggatgtcatc agcattgaca agacgggaga gaatttccgt ctgatctatg acaccaaggg 300
tcgctttgct gtacatcgta ttacacctga ggaggnccaa gtacaagttg gtgcaaaagt 360
gagaaaagaa tcttttgtgg ggcaccaaaa aanggaaatc cccttcantc ttgggtggac 420
ttcattggaa tggccccggc ancccanttn ccgnctttac cccccgnaat nccccccttt 480
canttccaaa agggggggaa aaatggaaat tancccantt ttccaagaaa tttnggaant 540
ttttggggna aanaaacttn ggggccnaaa ggaaaattta cccttgggaa ttttttttcca 600
atttccaaaa agggtttttt cgggaaacca accccttnggg ggtnaaaaac ccctngggtg 660
gggtnanttg ggggggggna accttggggn aagggggggg ccntaaaccc ccttaagggg 720
naaaanaaaa tttngggggg ggngggaatc ccccccaccc angaaaaaaa gaagggccnc 780
cccttgggga atcctttttt gaaccggggg ggtccccccct tggaaaanna aaggccccaa 840
ttgggncaac nnggcttttt ggncccccnc cgaacntttt tccaaacatt tttttttgtt 900
tnttttgggc caaaggggc caaaccaaaa cccattggga ttttcccntt tcccccncga 960
gggaaaangg ggtntccccc cntccnccan ttggggtngg gggggggggg gncccnangg 1020
nnttgggggg ggcccaaaac anaaacangg ggggggaaaa aggggccccc tggggggg 1078

<210> 56
<211> 465
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 404, 446, 459
<223> n = A,T,C or G

<400> 56

cgcgagtggg agcaccagga tctcgggctc ggaacgagac tgcacggatt gttttaagaa 60
aatggcagac aaaccagaca tgggggaaat cgccagcttc gataaggcca agctgaagaa 120
aacggagacg caggagaaga acaccctgcc gaccaaagag accattgagc aggagaagcg 180
gagtgaaatt tcctaagatc ctggaggatt tcctaccccc gtcctcttcg agaccccagt 240
cgtgatgtgg aggaagagcc acctgcaaga tggacacgag ccacaagctg cactgtgaac 300
ctgggcactc ccgcgcccga tgccacccgg ccttgtgggt ctctgaaagg ggaccccccc 360
ccaatcggac tggccaaaat tctcccggtt tgccccgggg attnttattg gaaaaattat 420
tttggtattg aaattaatgg aaaaantaaa aaccccccnc ccttt 465

<210> 57
<211> 835
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 272, 325, 380, 476, 512, 516, 524, 531, 539, 547, 557, 583, 589, 601, 603, 616, 618, 632, 633, 635, 650, 655, 660, 661, 662, 663, 674, 675, 677, 678, 679, 680, 681, 682, 684, 693, 694, 696, 704, 729, 739, 763, 783, 788, 802
<223> n = A,T,C or G

<400> 57
gtggccctgc gcagaccaga cttcgctcgt actcgtgcgc ctcgcttcgc ttttcctccg 60
caaccatgtc tgacaaaccc gatatggctg agatcgagaa attcgataag tcgaaactga 120
agaagacaga gacgcaagag aaaaatccac tgccttccaa agaaacgatt gaacaggaga 180
agcaagcagg cgaatcgtaa tgaggcgtgc gccgccaata tgcactgtac attccacaag 240
cattgccttc ttattttact tcttttagct gnttaacttt gtaagatgca aagagggtgg 300
atcaagttta aatgactggt gctgnccctt tcacattaaa aaactactga caaccgaagg 360
gccgcgcctg gcctttcccn tcttgtctat tctattctgg gctgggcagg ggaaagggaa 420
aagaaccttt gcattggttg gggtggaaaa gggaaagaaa agtggggggg tggggnaaag 480
aaaaggtggg gggggtgggg ggaaccgaac cngggnggaa aaantcctta ngaaaggtna 540
aaaaaanccc caaaagncct tggggccccc ccaaaagggg ggnggggtnc cccctgggcc 600
nanggggggcc tttggntnaa aattgggccc anngnttttt ttaaaatttn ccaangaaan 660
nnnggggccc ccanntnnnn nntntttttt ttnntngggg gttnccaaaa aaaaggggaa 720
attttttna aaaattttna tttttggggg gaaaaatggg ccncccaaat tttttttttt 780
ttnaaatnat ggcccaaaaa tnaaaaaaaa ggtttttaaa aaaaaccctt taaaa 835

<210> 58
<211> 379
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 191, 221, 232, 236, 340, 345
<223> n = A,T,C or G

<400> 58
gaggcctgca gcagcagaag cagcagaaag gccgcggcat gggcggcgct ggccgaggtg 60
tgtttggtgg ccggggccga ggtgggatcc cgggcacagg cagaggccag ccagagaaga 120
agcctggcag acaggcgggc aaacagtgag cgcccaccca gaccggcttg ctgcgccccc 180
ctcctgccca ngggtgggcg attccgctcc acagtctcgg ncgggatctt cntcanaaag 240
gaagaaggca tggcgccagg gggaaccccc ttcgtgtttt gtgacccttc ccttttaggt 300
gaaacccccct ttttcttgct aaaaccggca aatttctccn ggttngaaaa tgtttacttg 360
gtggtttttt gggttttg 379

<210> 59
<211> 286
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 215, 254, 273
<223> n = A,T,C or G

<400> 59
cgtggacgcc gccgaagaag catcgttaaa gtctctcttc accctgccgt catgtctaag 60
tcagagtctc ctaaagagcc cgaacagctg aggaagctct tcattggagg gttgagcttt 120
gaaacaactg atgagagcct gaggagccat tttgagcaat ggggaacgct cacggactgt 180
gtggtaatga gagatccaaa caccaagcgc tccangggct ttgggcttgt cacatatgcc 240
actgtggagg aggnggatgc agctatgaat gcnaggccac acaagg 286

<210> 60
<211> 280
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 2, 3, 271, 279
<223> n = A,T,C or G

<400> 60
tnnaaaattt taaaagttga gaccctgctt tacaatacac tttgaacttc ttctctgaat 60
tattaaagtt ctttatgacc tcatttataa acactaaatt ctgtcacctc ctgtcatttt 120
atttttttatt cattcaaatg tattttttct tgtgcatatt ataaaaatat attttatgag 180
ctcttactca aataaatacc tgtaaatgtc taaaggaaaa aaaaaaaaaa aaaaaaaaaa 240
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa nggggggggnc 280

<210> 61
<211> 732
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 312, 354, 409, 412, 471, 488, 496, 541, 553, 565, 590, 592,
598, 611, 632, 637, 640, 657, 679, 697, 722
<223> n = A,T,C or G

<400> 61
gtgatctgtg aaaatggttc gctattcact tgacccggag aaccccacga aatcatgcaa 60
atcaagaggt tccaatcttc gtgttcactt taagaacact cgtgaaactg ctcaggccat 120
caagggtatg catatacgaa aagccacgaa gtatctgaaa gatgtcactt tacagaaaca 180
gtgtgtacca ttccgacgtt acaatggtgg agttggcagg tgtgcgcagg ccaagcaatg 240
gggctggaca caaggtcggt ggcccaaaaa gaatgctgaa tttttgcttg cacatgctta 300
aaaaccgcag anaagtaatg ctgaacttaa ggggttaaga tggtagattc tttngtcatt 360
tggagcatat tccaagtgga accaaaaccc ccttaagaat gcgccccgnc cnggaccctt 420
accaagaagc ttcattgggt ccgggaattt aacccccatt tccattggaa nccttttttc 480
cccttggncc acccantttg gaaaggaatg gaattcccct ttttacccgg ggaaaaaaaa 540
ngggaaaacc ccnggaaatt tgggngtttc cccctttaaa aaacccccn gnaaaaanaa 600
aaaggggaaa nggggttttg gccccccccc gnaaaanggn aaaaaaaaaa aggggantttt 660
ttttcccccc caggaaaana gaaaaaaacc tttgggnaag gggaaaaaac cccaaaaaaa 720
anccttttttt tt 732

<210> 62
<211> 582
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature

<222> 452, 472, 523, 526, 550, 582
<223> n = A,T,C or G

<400> 62
gctggaagga actggtctgc tcacacttgc tggcttgcgc atcaggactg gctttatctc 60
ctgactcacg gtgcaaaggt gcactctgcg aacgttaagt ccgtccccag cgcttggaat 120
cctacggccc ccacagccgg atcccctcag ccttccaggt cctcaactcc cgcggacgct 180
gaacaatggc ctccatgggg ctacaggtaa tgggcatcgc gctggccgtc ctgggctggc 240
tggccgtcat gctgtgctgc gcgctgccat gtggcgcgtg acggccttca tcggcaagca 300
acattgtcac ctcgcagacc atctggggaa gggcctatgg atgaactgcg tggtgcagaa 360
gcacccggcc agaatgcagt gcaaggtgta ccgacttcgc ttgcttggca cttgcccgca 420
aggaccttgc aaggcgggcc cgcgccctcg tnattcatca agcattcatc gngggcttgc 480
ttcttgggcg gtgctggctt gtccgtgggt gggggggca aantgnacca acttgccctg 540
ggaaggatgn aaaagcgccc aaggcccaag aaccattgat cn 582

<210> 63
<211> 462
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 411, 435, 458
<223> n = A,T,C or G

<400> 63
gtccggcttc ggagcgggag tgttcgttgt gccagcgact aaaaagagaa ttaaatatgg 60
gtgatgttga gaaaggcaag aagattttta ttatgaagtg ttcccagtgc cacaccgttg 120
aaaagggagg caagcacaag actgggccaa atctccatgg tctctttggg cggaagacag 180
gtcaggcccc tggatactct tacacagccg ccaataagaa caaaggcatc atctggggag 240
aggatacact gatggagtat ttggagaatc ccaagaagta catccctgga acaaaaatga 300
tctttgtccg gcattaagaa gaaggaagaa agggcagact taataggctt atctcaaaaa 360
agctactaat gagtaataat tggccactgc cttatttatt acaaaacaga natgtctcat 420
gactttttta tgtgncccat cctttaatag acctcctnca cc 462

<210> 64
<211> 956
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 604, 620, 680, 687, 706, 743, 766, 771, 773, 779, 781, 782,
789, 794, 798, 800, 816, 823, 831, 833, 856, 869, 877, 878,
893, 897, 905, 922, 933
<223> n = A,T,C or G

<400> 64
ggacgatgtc cgcatgacaa ccgacgttgg agtttggagg tgcttgcctt agagcaaggg 60
aaacagctct cattcaaagg aactagaagc ctctccctca gtggtaggga gacagccagg 120
agcggttttc tgggaactgt gggatgtgcc cttgggggcc cgagaaaaca gaaggaagat 180
gctccagacc agtaactaca gcctggtgct ctctctgcag ttcctgctgc tgtcctatga 240
cctctttgtc aattccttct cagaactgct ccaaaagact cctgtcatcc agcttgtgct 300
cttcatcatc caggatattg cagtcctctt caacatcatc atcatttcc tcatgttctt 360
caacaccttc gtcttccagg ctggcctggt caacctccta ttccataagt tcaaagggac 420
catcatcctg acagctgtgt actttgccct cagcatctcc cttcatgtct gggtcatgaa 480
cttacgctgg aaaaactcca acagcttcat atggacagat ggacttcaaa tgctgtttgt 540
attccagaga ctagcaagca agtgttgact gctacttcta taaacggaca gcccgtaaga 600
ctanggcgaa tcctcacttn ttacccagga acttctttgg tgggctggcg caaggaagt 660
ttccattgcc caagtttccn aaagggngaa ccctctttgg ccacancctg gaatggggaa 720
aacctttttc cctttccctg ganaagaaaa agccccccaa ttttgncttg ncntttttnc 780
nngggggana aaantttngn ccccctttttg gcattngggg gcnaaaccag ncntggggaa 840

tttttccca aagggnaagg ggttccaana aactaannct gggggtttc ccncccnttt 900
cccanaaaag ggggaaagaa anccccccc ctnttttggg cccccaaaat ttgaag 956

<210> 65
<211> 812
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 563, 569, 646, 695, 708, 783, 795
<223> n = A,T,C or G

<400> 65
ctgctgggag tcagctccca gggggtcag acctacgaga tgttctcctg gttcctgcgg 60
cccctgccag gcccccacaa gcagctcctc caccacgtca gcaccttggc tgccttcaca 120
gtccggcagg tgcagcagca ccaggggaac ctggatgctt cggccccgc acgtgacctt 180
gtcgatgcct tcctgctgaa gatggcacag gaggaacaaa acccaggcac agaattcacc 240
aacaagaaca tgctgatgac agtcatttat ttgctgtttg ctgggacgat gacggtcagc 300
accacggtcg gctataccct cctgctcctg atgaaatacc ctcatgtcca aaagtgggta 360
cgtgaggagc tgaatcggga gctgggggct ggccaggcac caagcctagg ggaccgtacc 420
cgcctccctt acaccgacgc ggttctgcat gaggcgcagc ggctgctggc gcttggtgcc 480
cattgggaaa taccccgcac cctcatgcgg accacccgct tccgagggta caccctgccc 540
cagggcacgg aggtcttccc ctncttggnt catcctgcat gaccccaaca tcttcaagca 600
cccagaagag ttcaacccaa ccgtttcctg gatgcagatg gacggntcaa ggaagcatga 660
agcgttcttg ccttctcttt agggaagccg tggtnttgcc tttggaanaa gggcctggcc 720
aaaaagccgg gagcttcttt ccttcttttt tttcaacccc accctttccc ttaccaaagc 780
ccnttttttt ccccnttggg aaaaaaaccc cc 812

<210> 66
<211> 78
<212> DNA
<213> Homo sapiens

<400> 66
ggccgctcgc gatctagaac tagggccact gcgcagacca gacttcgctc gtactcgtgc 60
gcctcgcttc gcttttcc 78

<210> 67
<211> 562
<212> DNA
<213> Homo sapiens

<400> 67
ggccgcgtcg accgaggata ttgccaaccg cagccgggct gaggctgaga gcatgtacca 60
gatcaagtat gaggagctgc agagcctggc tgggaagcac ggggatgacc tgcggcgcac 120
aaagactgag atctctgaga tgaaccggaa catcagccgg ctccaggctg agattgaggg 180
cctcaaaggc cagagggctt ccctggaggc cgccattgca gatgccgagc agcgtggaga 240
gctggccatt aaggatgcca acgccaagtt gtccgagctg gaggccgccc tgcagcgggc 300
caagcaggac atggcgcggc agctgcgtga gtaccaggag ctgatgaacg tcaagctggc 360
cctggacatc gagatcgcca cctacaggaa gctgctggag ggcgaggaga gccggctgga 420
gtctgggatg cagaacatga gtattcatac gaagaccacc agcggctatg caggtggtct 480
gagctcggcc tatgggggcc tcacaagccc cggcctcagc tacagcctgg gctccagctt 540
tggctctggc gcgggctcca gc 562

<210> 68
<211> 539
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature

<222> 60, 228
<223> n = A,T,C or G

<400> 68
ggccgccctt tttttttttt tttgtagtca gctatttaat taggttctta agacatttan 60
aacaccaatt tgtgaggata aattccattc gtcagagcaa acacagatcg caggtagccc 120
tggagctgag gaatagcttt gatttttggt aaaatttgtg agtccacagc tttctgatca 180
atcttgcgct gctccgtaat ctcatatttc tctttttctg tgtcgaanat ctcaccttcc 240
tggtgtctgg gcttccgcag cttcttcttc ttgaagtaag catcagtaag atgttttggg 300
atttttacat tgctgatatc gattttggtt gaagtggcaa tgacaaattt ctggtgtgtt 360
cttcgtagag gaactcgatt gaggaccaga ggtccagtca caagtaataa gccactagcc 420
agctgcttca ggaaaaccac cctcttgccc ctgtggcgtc cagtgaggat gatcagaatg 480
gtcccggggg taatgctggc tcgcagtttt ctcacgtgct gactgaaggg ttttttgcc 539

<210> 69
<211> 594
<212> DNA
<213> Homo sapiens

<400> 69
ggccgccctt tttttttttt tttagtagag acggggttac accatcttgg ccaggctggt 60
cttgaactcc tgacctcagg tgatccacct gccttggcct cccaatgtac taggattaca 120
ggcatgagcc actgtgccca gccacatgcc aaatatttat actttcaaat acctgttgga 180
aaatattcaa agaacattat gtaaggtcta gggataactt ttagatcctt aacgagctaa 240
tctttcatgg acagaaaggg agagggtgag tgggcagctg agcaggcaag catggcaaat 300
tttttattta aagtgaatga tgagtcctca aatgcaataa cctgagaatt acgctcacat 360
ttttctttct tctccgctta ccctagcttt tatcaccaga aagggacata gtggagctga 420
ctgaaaatat ggccattaca aacagaacat ctcataaatg aagcaaccat gtatagttcc 480
atttaacatt cagtttatca tttcatgctc cccttcacag ttctaaaatt tgttataaat 540
taaatagata taaaatttaa ctagtattat gtacacttca ctaagtaaca cata 594

<210> 70
<211> 383
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 40, 131, 265, 342
<223> n = A,T,C or G

<400> 70
ggccgccctt tttttttttt tttttttttt ttggctctan aggggggtaga gggggtgcta 60
tagggtaaat acgggcccta tttcaaagat ttttagggga attaattcta ggacgatggg 120
catgaaactg nggtttgctc cacagatttc agagcattga ccgtagtata cccccggtcg 180
tgtagcggtg aaagtggttt ggtttaaacg tccgggaatt gcatctgttt ttaagcctaa 240
tgtggggaca gctcatgagt gcaanacgtc ttgtgatgta attattatac gaatgggggc 300
ttcaatcggg agtactactc gattgtcaac gtcaaggagt cncaggtcgc ctggttctag 360
gaataatggg ggaagtatgt agg 383

<210> 71
<211> 574
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 39, 156, 206, 297, 302, 310, 320, 347, 355, 431, 435, 440,
462, 464, 466, 488, 521, 527
<223> n = A,T,C or G

<400> 71

ggccgccctt ttttttttt ttttttttt ttttttctna aaacaagttt tatttaaata 60
agggtttaaa tacattacac ataacattaa aactgaaggg gaaaaaaac caaaaaccag 120
tttgttactt cacatggcat tgggcagctg ctgctnttaa gttgcaagct ctacagctag 180
ctacatgact gatggatcag tttganattt gttcccttgt caaaagttta actctgatag 240
aaggttggcc tcacattctg atgtttggac atcccttagc taggatatgt ctggtcnaac 300
anacctttgn ggcaagccan atgtcctatc acctcgctag cggtaanagg gcctntttga 360
gctctgtcca cctagtcagg ttggagacac caggggatct accaccaaaa gctcccttct 420
agtagtacag ntggngcttn tgccttaccc catcctctcc tntnanattc accgaggact 480
gttcaggngg taacattctc ttagggtagg gaactctgca nagggagagc tgaggaggtt 540
ccggccatag ttgtttgtaa tcttagggct ctgg 574

<210> 72
<211> 601
<212> DNA
<213> Homo sapiens

<400> 72
ggccgcgtcg acgatatttg aaatacaact ttattctgat tctaaacgaa aaggaatggg 60
aatgacagta acaaacaaga tttcaccact gaatattgtg atgtgactgc agcagtctta 120
tatatgaaac tcaaggaatc aactgcgttc caaaacagct aaatatgcag gtccaaacaa 180
tgaagttatt ttttaaactg ccacattcac tccgaagccc actcatctcc ttcagcatcc 240
cacagatgaa gcacatgttc cgcttagcta gataataatg aggtggcaca cacgctgcac 300
cgctgacatc acaggacagc tgcctataaa actagacttc tgacgctggg ctccagcttc 360
attctcacag gtcatcatcc tcatccggga gagcagttgt ctgagcaacc tctaagtcgt 420
gctcatactg tgctgccaaa gctgggtcca tgacaacttc tggtggggcg agagcaggca 480
tggcaacaaa ttccaagtta gggtctccaa tgagcttcct agcaagccag aggaagggct 540
tttcaaagtt gtagttactt ttggcagaaa tgtcgtagta ctgaagattc ttctttcggt 600
g 601

<210> 73
<211> 139
<212> DNA
<213> Homo sapiens

<400> 73
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaaccattc 60
gtagacgacc tgcttctggg tcggggtttc gtacgtagca gagcagctcc ctcgctgcga 120
tctattgaaa ggtcgacgc 139

<210> 74
<211> 139
<212> DNA
<213> Homo sapiens

<400> 74
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgagggggc 139

<210> 75
<211> 275
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 58, 59, 86, 87, 93, 119, 160, 170, 207, 235, 237, 253, 260, 263, 268
<223> n = A,T,C or G

<400> 75
ggccgccctt ttttttttt ttttttttt ttttttttt ttttttttt tttggggnnc 60

caaatttttt tatttgaagg aatggnncaa atnaaaaaac ttaaggggat gttttggtnc 120
aacttataaa aaaggtaaag gaaaccccaa catgcatgcn ctgccttggn gaccagggaa 180
gtcaccccac ggctatgggg aaattanccc gaggcttaac tttcattatc actgncnccc 240
agggtgtgct tgncaaaaan atnttccncc aagcc 275

<210> 76
<211> 582
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 148, 180, 364
<223> n = A,T,C or G

<400> 76
ggccgccctt tttttttttt ttttgactgt cctaaattgt ttattaagta tgaattttac 60
aaactttact tatattagcg gtaacggtgg agctggagag tattgcgcct tctccaagct 120
gcccggcgag agccaccaat agtgtggngg aacttgtggc cctttccaag gccacggctn 180
tttcggcctg cagatgtcag cccacgcatc tccctgtgct tgtggactgg tttggtgatc 240
cactgggtgt caggatttct tctgatagct ttatggaatg gatcaatgag gataacctca 300
aaaaatttgt atgtggaatc ttcaccaacc cagtaagaat tcaggactct cagagcccca 360
cagnggcgtc cagctcgctc ctctgcaacg gactgaaggc ttcgagcaaa ctttagctgg 420
ttaacaccat gatggacagg cttgccgtaa gttgcaccct taggaactgg gcgttttcgg 480
ccaccacggc gaacacgaat cctatatata acgtaacctt gcttggcctt gtagcccagt 540
cggcgcgctt tatcaggccg ggtggggcgg ggagccctgt gg 582

<210> 77
<211> 139
<212> DNA
<213> Homo sapiens

<400> 77
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgagggggc 139

<210> 78
<211> 582
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 478
<223> n = A,T,C or G

<400> 78
ggccgccctt tttttttttt tttaaagaag taagccttta tttccttgtt ttgcaaataa 60
aactggctaa gttggttgct ttttggtgat tagtcaaaga gaccaaatcc catatcctcg 120
tccgactcct ccgactcttc cttggcttca accttagctg ggctgcagc agcagcagga 180
gcagctgtgg tggcagcagc cacaggggca gcagccacaa aggcagatgg atcagccaag 240
aaggccttga ccttttcagc aagtgggaag gtgtaatccg tctccacaga caaggccagg 300
actcgtttgt acccgttgat gatagaatgg ggtactgatg caacagttgg gtagccaatc 360
tgcagacaga cactggcaac attgcggaca ccctccagga agcgagaatg cagagtttcc 420
tctgtgatat caagcacttc agggttgtag atgctgccat tgtcgaacac ctgctggntg 480
accagcccaa aggagaaggg ggagatgttg agcatgttca gcagcgtggc ttcgctggct 540
cccactttgt ctccagtctt gatcagctgc acatcactca gg 582

<210> 79
<211> 468
<212> DNA

<213> Homo sapiens

<220>
<221> misc_feature
<222> 45, 98, 110, 147, 165, 220, 238, 277, 293, 343, 367, 371,
421, 446
<223> n = A,T,C or G

<400> 79
ggccgccctt tttttttttt tttttttttt tttttttttt ttttnggcat atgaaaattt 60
attactacag ggttttcacc attaatattt atgatctngg tctttccttn ttgcctttgt 120
atagggccaa aagagaaaca ttggctnctt tgacaacctt aaagnggact ccaggaatat 180
caccaacagc atgacctttg cgaccaaatc cagcaaccan aacttcatca ttttcctnaa 240
taaagttcaa gcaaccgtca ttgggtacaa aggctgngat tttcttgcca ttnttgatca 300
gctggaccct tacacacttc ctaatggcaa aatttggctg ttnggcttca actcctactt 360
tttccancac nattcctttt gcatgaaaag cacctccaaa agggttggcc tttagggctg 420
ngcccaaatg agctttctta tactgnttat catgccactt ctggtctc 468

<210> 80
<211> 467
<212> DNA
<213> Homo sapiens

<400> 80
ggccgcgtcg accgccaaca tgggccgcgt tcgcaccaaa accgtgaaga aggcggcccg 60
ggtcatcata gaaaagtact acacgcgcct gggcaacgac ttccacacga acaagcgcgt 120
gtgcgaggag atcgccatta tccccagcaa aaagctccgc aacaagatag caggttatgt 180
cacgcatctg atgaagcgaa ttcagagagg cccagtaaga ggtatctcca tcaagctgca 240
ggaggaggag agagaaagga gagacaatta tgttcctgag gtctcagcct tggatcagga 300
gattattgaa gtagatcctg acactaagga aatgctgaag cttttggact tcggcagtct 360
gtccaacctt caggtcactc agcctacagt tgggatgaat ttcaaaacgc ctcggggacc 420
tgtttgaatt ttttctgtag tgctgtatta ttttcaataa atctggg 467

<210> 81
<211> 323
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 175, 234
<223> n = A,T,C or G

<400> 81
ggccgccctt tttttttttt tttagtttgg gatatgacct ttattgaact tatccaccag 60
agtggaaata atgtctgtac aaaaccaaat gtttgttact ataacttctg catcacaatt 120
aaaatccaaa cagtttttta aaaacagtca actcaatcaa aacccactac ttcanaatca 180
atagcttcct tgaagccaca gtaacactta aatatggtta agactcgaat gcanaaattt 240
ggttggttgg aaagctaatt aaacttccaa cttgctcaaa tagaattaca aaaaggcaaa 300
attgtgtttt tcacagagat aca 323

<210> 82
<211> 86
<212> DNA
<213> Homo sapiens

<400> 82
ggccgcgtcg actagactga gtcgcccggg tacccgtgtt cccaataaag ccttttgctg 60
tttgcaaaaa aaaaaaaaaa aagggc 86

<210> 83
<211> 550

<212> DNA
<213> Homo sapiens

<400> 83
ggccgcgtcg acggttatcc agactactac tcagattgcc agctttaaga ctgatgaatg 60
ctaccatcac gtgaagaatt gtttttcaaa ggtctcattg gcaatatacg aattgacagt 120
gttatcccac atattttgaa aatggagcct gcagattata actctcaaat aattggtcac 180
agcatttgaa aactgtgact gcagtgctgt aaacttaact gttctttgcc agaacacaag 240
acaccaaatt gaactcactg cttttgaggc atctggaaat ttttacttta aaaagtaacc 300
agaatccaag gtatttttat tttagcttcc cttaagaatt tttgaagtga ctgggcaggc 360
agcagaaatt aaatgaattt ttcttcctga ttcctttaaa tgaatatgaa acactacaaa 420
tttattcttg gtgaagatga tacctgaagc tgtcacctct tgattatcta aactaagcgc 480
tcattctatt ttataaaaca aataaattag tctctttttt ctgaaaaaaa aaaaaaaaaa 540
aaaaaagggc 550

<210> 84
<211> 630
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 451, 539, 551, 578
<223> n = A,T,C or G

<400> 84
ggccgccctt tttttttttt tttagattta ggacttttat ttttttcaca cccaagttag 60
cctgagttga ctctcattgt tcccctatct acccacagtc cccatccaac acgaagaaat 120
atttgctttc acattacagc ataaagacca cctaagcttt gacagctgac ttgtagtggg 180
tcagcgtgcg ggcagaaggg tcagtggcat tgatccactt gggcatccag taatggctca 240
gccagtcagc ccggcctggg taatggcgtt caaagacttg acggtagtaa tatccttctt 300
tggttttagg agtattgaag ggaaatttct gggctgcatt tgccatcatt gcatcatcaa 360
cctgatgttc aacgtattcc tgtaaaatct taaaccagga attcttaact gaagttattc 420
catcactgaa ggcttctttt ggtcgccaga naatctcttt gggtatcaga ttggaatcct 480
caaacgtctc tctcaggaga tgtttttcta tcccattctt tggaattctc atttctggng 540
gcagagacaa ngtaatagga agaaaatcga tgatctanaa atgggactct cagttcaaga 600
ccatgggcag cagtagttcg atctgcgcgg 630

<210> 85
<211> 688
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 162, 178, 235, 312, 494, 575, 621, 636, 659, 661, 682
<223> n = A,T,C or G

<400> 85
ggccgcgtcg actttttttt tttttttttt aaatggtttt attttatgta caaataatga 60
acatacgttg tacccataaa ttctactttc caaaaacagg agctttttaa aagaaaacca 120
cataacaact tttaaaaggc gctgggattc ctctgcttct anatcaatgc tgggctanaa 180
aagtaaagtc tgttctatca ggaatcacaa gttggaactg agtattctcc aaagnggaaa 240
ttctagagtg tagtgtcact ccaggcaaag attattcagt tctcatcccc agcatccaca 300
actacctatc anaagggtta aaccaggtca aaacagtcca gcataattag gcttcatcaa 360
acaatgtcat tatgctcttc taagatgcaa ataaaccaaa acaggaaata ctaaaataaa 420
aatatctgac actgccatac aaattgttag ttcctttttg tatccccccct tctataacat 480
taacaaaggg aatnttttac tgcaaagaat attttatttt atacatcact agccatgaat 540
ttttgccatt agttactata caaatgctgc ctagngccat tatccaaata gcacaaccat 600
tttacgtcca caattcactt ntatagttac aagtanaatt ttcatgattt acttaagtnc 660
ntctatcagt aaagatttaa cnctgaga 688

<210> 86
<211> 530
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 235, 247, 396, 467, 488, 521
<223> n = A,T,C or G

<400> 86
ggccgccctt tttttttttt tttcggatgc aaacagcaaa aggctttatt gggaacacgg 60
gtacccgggc gactcagtct atcggatgac tggcgcaccg agtgtggggt ttttaccctt 120
tttatagggc tggggagcaa aaagcgcggt tacagaagcg agaagcgagc tgattggtta 180
gtttaaataa ggcttggggt ttttcccggt cttttgggga acttgaaact gaggngggac 240
tttccanaaa ctgttgctag tttcgcttta tctgagtacc atctgttctt ggccctgagc 300
cggggcccag gtgctcgacc acagatatcc tgtttggccc ctgtcccagt tttgttcagc 360
cttattcttt aactaaactt ccttgtgact tttganaact cagctctggt actttttcat 420
gccttgcaaa atggcgttac tgcagctagc ttgctaagcc ttatggnggg gtctttcatt 480
ccccctntt tctggaaact gaataaaatc ttttatttac ncgattctac 530

<210> 87
<211> 559
<212> DNA
<213> Homo sapiens

<400> 87
ggccgcgtcg accagagtgg tcgttgtctt tctaggtctc agccggtcgt cgcgacgttc 60
gcccgctcgc tctgaggctc ctgaagccga aaccagctag actttcctcc ttcccgcctg 120
cctgtagcgg cgttgttgcc actccgccac catgttcgag gcgcgcctgg tccagggctc 180
catcctcaag aaggtgttgg aggcactcaa ggacctcatc aacgaggcct gctgggatat 240
tagctccagc ggtgtaaacc tgcagagcat ggactcgtcc cacgtctctt tggtgcagct 300
caccctgcgg tctgagggct tcgacaccta ccgctgcgac cgcaacctgg ccatgggcgt 360
gaacctcacc agtatgtcca aaatactaaa atgcgccggc aatgaagata tcattacact 420
aagggccgaa gataacgcgg ataccttggc gctagtattt gaagcaccaa accaggagaa 480
agtttcagac tatgaaatga agttgatgga tttagatgtt gaacaacttg gaattccaga 540
acaggagtac agctgtgta 559

<210> 88
<211> 599
<212> DNA
<213> Homo sapiens

<400> 88
ggccgcgtcg acgctccccc ctcccccga gcgccgctcc ggctgcaccg cgctcgctcc 60
gagtttcagg ctcgtgctaa gctagcgccg tcgtcgtctc ccttcagtcg ccatcatgat 120
tatctaccgg gacctcatca gccacgatga gatgttctcc gacatctaca agatccggga 180
gatcgcggac gggttgtgcc tggaggtgga ggggaagatg gtcagtagga cagaaggtaa 240
cattgatgac tcgctcattg gtggaaatgc ctccgctgaa ggccccgagg gcgaaggtac 300
cgaaagcaca gtaatcactg gtgtcgatat tgtcatgaac catcacctgc aggaaacaag 360
tttcacaaaa gaagcctaca agaagtacat caaagattac atgaaatcaa tcaaagggaa 420
acttgaagaa cagagaccag aaagagtaaa accttttatg acaggggctg cagaacaaat 480
caagcacatc cttgctaatt tcaaaaacta ccagttcttt attggtgaaa acatgaatcc 540
agatggcatg gttgctctat tggactaccg tgaggatggt gtgaccccat atatgattt 599

<210> 89
<211> 355
<212> DNA
<213> Homo sapiens

<400> 89
ggccgcgtcg acctttgttt aaaataagat gcttcagcaa aagtcattct ctctttaacc 60

atataattta aaaactcctc ttcacgattg atagcaaaat cagaaacgtt agggcaccag 120
tgagttgaaa aaactggtct taagttggaa aaactattat taataatatt atcctatcca 180
tccatatcta ttgaaattgt acaggtccat aatttcattt taattaatta taggaaagaa 240
gaaaagataa tacccatttg ttctatcacc cctctcccta tcattaacta tcaaataaat 300
aaataaaagc aatctgattt ccaacgtggt aaaaaaaaaa aaaaaaaaaa agggc 355

<210> 90
<211> 455
<212> DNA
<213> Homo sapiens

<400> 90
ggccgcgtcg acgtcgtgga cttcgtactg ctaggaagct ccgtagtcac cgacgagacc 60
agaagtggca tgataaacag tataagaaag ctcatttggg cacagcccta aaggccaacc 120
cttttggagg tgcttctcat gcaaaaggaa tcgtgctgga aaaagtagga gttgaagcca 180
aacagccaaa ttctgccatt aggaagtgtg taagggtcca gctgatcaag aatggcaaga 240
aaatcacagc ctttgtaccc aatgacggtt gcttgaactt tattgaggaa aatgatgaag 300
ttctggttgc tggatttggt cgcaaaggtc atgctgttgg tgatattcct ggagtccgct 360
ttaaggttgt caaagtagcc aatgtttctc ttttggccct atacaaaggc aagaaggaaa 420
gaccaagatc ataaatatta atggtgaaaa cactg 455

<210> 91
<211> 570
<212> DNA
<213> Homo sapiens

<400> 91
ggccgcgtcg accgtcctcg tggaagtgac atcgtcttta aaccctgcgt ggcaatccct 60
gacgcaccgc cgtgatgccc agggaagaca gggcgacctg gaagtccaac tacttcctta 120
agatcatcca actattggat gattatccga aatgtttcat tgtgggagca gacaatgtgg 180
gctccaagca gatgcagcag atccgcatgt cccttcgtgg gaaggctgtg gtgctgatgg 240
gcaagaacac catgatgcgc aaggccatcc gagggcacct ggaaaacaac ccagctctgg 300
agaaactgct gcctcatatc cgggggaatg tgggctttgt gttcaccaag gaggacctca 360
ctgagatcag ggacatgttg ctggccaata aggtgccagc tgctgcccgt gctggtgcca 420
ttgccccatg tgaagtcact gtgccagccc agaacactgg tctcgggccc gagaagacct 480
cctttttcca ggctttaggt atcaccacta aaatctccag gggcaccatt gaaatcctga 540
gtgatgtgca gctgatcaag actggagaca 570

<210> 92
<211> 445
<212> DNA
<213> Homo sapiens

<400> 92
ggccgcgtcg acgtagtttt ctctgcgcgt gtgcgttttc cctcctcccc cgccctcagg 60
gtccacggcc accatggcgt attaggggca gcagtgcctg cggcagcatt ggcctttgca 120
gcggcggcag cagcaccagg ctctgcagcg gcaacccccca gcggcttaag ccatggcgct 180
tctcacggca ttcagcagca gcgttgctgt aaccgacaaa gacaccttcg aattaagcac 240
attcctcgat tccagcaaag caccgcaaca tgaccgaaat gagcttcctg agcagcgagg 300
tgttggtggg ggacttgatg tccccccttcg acccgtcggg tttgggggct gaagaaagcc 360
taggtctctt agatgattac ctggaggtgg ccaagcactt caaacctcat gggttctcca 420
gcgacaaggc taaggcgggc tcctc 445

<210> 93
<211> 541
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 484
<223> n = A,T,C or G

<400> 93
ggccgcgtcg acggccgagc aggaggcgcc atcatgggag tggacatccg ccataacaag 60
gaccgaaagg ttcggcgcaa ggagcccaag agccaggata tctacctgag gctgttggtc 120
aagttataca ggtttctggc cagaagaacc aactccacat tcaaccaggt tgtgttgaag 180
aggttgttta tgagtcgcac caaccggccg cctctgtccc tttcccggat gatccggaag 240
atgaagcttc ctggccggga aaacaagacg gccgtggttg tggggaccat aactgatgat 300
gtgcgggttc aggaggtacc caaactgaag gtatgtgcac tgcgcgtgac cagccgggcc 360
cgcagccgca tcctcagggc agggggcaag atcctcactt tcgaccagct ggccctggac 420
tcccctaagg gctgtggcac tgtcctgctc tccggtcctc gcaagggccg agaggtgtac 480
cggncatttc ggcaaggccc caggaacccc gcacagccac accaaaccct acgtccgctc 540
c 541

<210> 94
<211> 574
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 248, 503
<223> n = A,T,C or G

<400> 94
ggccgccctt tttttttttt tttgactttt taaagaagta agcctttatt tccttgtttt 60
gcaaataaaa ctggctaagt tggttgcttt ttggtgatta gtcaaagaga ccaaatccca 120
tatcctcgtc cgactcctcc gactcttcct tggcttcaac cttagctggg gctgcagcag 180
cagcaggagc agctgtggtg gcagcagcca caggggcagc agccacaaag gcagatggat 240
cagccaanaa ggccttgacc ttttcagcaa gtgggaaggt gtaatccgtc tccacagaca 300
aggccaggac tcgtttgtac ccgttgatga tagaatgggg tactgatgca acagttgggt 360
agccaatctg cagacagaca ctggcaacat tgcggacacc ctccaggaag cgagaatgca 420
gagtttcctc tgtgatatca agcacttcag ggttgtagat gctgccattg tcgaacacct 480
gctggatgac cagcccaaag ganaaggggg agatgttgag catgttcagc agcgtggctt 540
cgctggctcc actttgtctc agtcttgatc agct 574

<210> 95
<211> 199
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 91, 186
<223> n = A,T,C or G

<400> 95
ggccgcgtcg actttttttt tttttttttt tttttttttt acagtcgatt ccctctcatt 60
tattccttgg ggaaaaagaa aaacacaaat nttaaaaact aaagcaagtc agggaagcct 120
ggaaagatac ccagattttg ataacatgtt aaaaggaaat ccaggctaag gaatctcatt 180
ttctancttt gatctggtt 199

<210> 96
<211> 546
<212> DNA
<213> Homo sapiens

<400> 96
ggccgcgtcg acgtatttat aaagtttttc cagataaact aatcaaataa attagaataa 60
tgtgacaaca ttacaaattt aatttgttag ctgcattcct tctgatgtta ccacgataga 120
atgttactga tgattcaggg ctatttctga agtctgtatg ttgctgctgt ccccagtgat 180
ggtggactta tctttgcctt acctgatcac aaattatgtt ggggaaaata aagatttaat 240
atttctttaa atagaaaaag aatttggttt tgctcgttta agagcaatga gaaaatgatg 300

gaatgttgac tgtgtttggc acacaggaca cggaccttca tggaagtcct tgctctgcgt 360
ggcatctgtc agcttttcac ctttcattct tattcttcac ttttgctgct gagcctagct 420
gtacaaactt gcactttcat ttgctaatat aaattcagtt ttattttacc attttagaga 480
ctactaatga ttaaatgtag aaggagaggg tgcacatgtt tttatgtgga gtgtttaaaa 540
gataaa 546

<210> 97
<211> 645
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 164, 488, 560, 568, 575, 609, 611, 644
<223> n = A,T,C or G

<400> 97
gccgcccttt tttttttttt ttaagttttt aaactttttta tttgcatatt aaaaaaattg 60
tgcattccaa taattaaaat catttgaaca aaaaaaaaat ggcactctga ttaaactgca 120
ttacagcctg caggacacct tgggccagct tggttttact ctanatttca ctgtcgtccc 180
accccacttc ttccacccca cttcttcctt caccaacatg caagttcttt ccttccctgc 240
cagccagata gatagacaga tgggaaaggc aggcgcggcc ttcgttgtca gtagttcttt 300
gatgtgaaag gggcagcaca gtcatttaaa cttgatccaa cctctttgca tcttacaaag 360
ttaaacagct aaaagaagta aaataagaag gcaatgcttg tggaatgtac agtgcatatt 420
ggcggcgcac gcctcattac gattcgcctg cttgcttctc ctgttcaatc gtttctttgg 480
aaggcagngg atttttctct tgcgtctctg tcttcttcag tttcgactta tcgaatttct 540
cgatctcagc catatcgggn tttgtcanac atggnttgcg gaggaaaagc gaagcgaggc 600
gcacgagtnc nagcgaagtc tggtctgcgc agtggccgtc gacnc 645

<210> 98
<211> 524
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 398
<223> n = A,T,C or G

<400> 98
ggccgcgtcg acagcaaagg ctccgtggtt ctggcctaca gtggcggcct ggacacctcg 60
tgcatcctcg tgtggctgaa ggaacaaggc tatgacgtca ttgcctatct ggccaacatt 120
ggccagaagg aagacttcga ggaagccagg aagaaggcac tgaagcttgg ggccaaaaag 180
gtgttcattg aggatgtcag cagggagttt gtggaggagt tcatctggcc ggccatccag 240
tccagcgcac tgtatgagga ccgctacctc ctgggcacct ctcttgccag gccctgcatc 300
gcccgcaaac aagtggaaat cgcccagcgg gagggggcca agtatgtgtc ccacggcgcc 360
acaggaaagg ggaacgatca ggtccggttt gagctcanct gctactcact ggcccccag 420
ataaaggtca ttgctccctg gaggatgcct gaattctaca accggttcaa gggccgcaat 480
gacctgatgg agtacgcaaa gcaacacggg attcccatcc cggt 524

<210> 99
<211> 139
<212> DNA
<213> Homo sapiens

<400> 99
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaaccattc 60
gtagacgacc tgcttctggg tcggggtttc gtacgtagca gagcagctcc ctcgctgcga 120
tctattgaaa ggtcgacgc 139

<210> 100
<211> 232

<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 25, 100, 161, 200
<223> n = A,T,C or G

<400> 100
ggccgccctt tttttttttt ttttnagttc cagctgattt tatttccttc tcaaaaaaag 60
ttatttacag aaggtatata tcaacaatct gacaggcagn gaacttgaca tgattagctg 120
gcatgatttt ttcttttttt tcccccaaac attgtttttg nggccttgaa ttttaagaca 180
aatattctac acggcatatn gcacaggatg gatggcaaaa aaaagtttaa aa 232

<210> 101
<211> 455
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 96, 144, 161, 209, 224, 257, 322, 349, 355
<223> n = A,T,C or G

<400> 101
ggccgccctt tttttttttt tttatttaaa aattttcttt atttcaaaac tgcctttatg 60
tacagacatc atttaaaaaa tgcacataca atggantatt tccaaggaac aggagctgga 120
aataaaattt aaggacatta ttanaactga aattgtccca nagaagttct gaggatcagg 180
attccttaaa tgtccttgat aacctcttna agttcttcct ttgngaacat gtggaaattc 240
tggccaggct gcactgnggc tagctcaatg tttgttgcat tcagcttctc ctccattact 300
tgtttgagga tgatgagtga anacttgatg gcttctttca aagtcatana cttgnggtaa 360
acttcttgca aggagctctg ggcaccctct gaagcagagc caattgctcg agcatcacac 420
tgtacaaagg tcccagatgg gtccatatga aacag 455

<210> 102
<211> 59
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 54
<223> n = A,T,C or G

<400> 102
ggccgcgtcg acgacagaat ttcggtggtg caggccctgg ttctgaccac agtntacca 59

<210> 103
<211> 502
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 407, 431, 464
<223> n = A,T,C or G

<400> 103
ggccgcgtcg acctgaatgc atttatttca caaatttgtt taagggctat aaacaaaatt 60
tgtatcaact tgtttgtata tatttacaaa acagaaaatt aagtcagcat taagtcaaca 120
tgagtagtca cagaattttt cccctttata aatggtacat attcaaggag acttcaaaaa 180
gtttgtggaa aaatggttaa aagataaaaa atataaacta tatttttgaa cattagctct 240

atagcattca agacactttt gtaagtgatg ataccagcta tttagtccat ccctaaagaa 300
ctgagagttc tgggaattta tctacatcaa tgcagtttct ttatacatta acttgagaaa 360
aatgtactgc cctgaaaaat tttttaaga ttaggaaaca aaaagtnaga aggtgccaaa 420
ccaggactgt ngggtggatg cctagtgatt tcccatcaaa actnttgcaa aatggccttg 480
tttgatgaga gggatgagca gg 502

<210> 104
<211> 504
<212> DNA
<213> Homo sapiens

<400> 104
ggccgcgtcg acccgaagcg ggagcggcca aaatgaagtt taatcccttt gtgacttccg 60
accgaagcaa gaatcgcaaa aggcatttca atgcaccttc ccacattcga aggaagatta 120
tgtcttcccc tctttccaaa gagctgagac agaagtacaa cgtgcgatcc atgcccatcc 180
gaaaggatga tgaagttcag gttgtacgtg gacactataa aggtcagcaa attggcaaag 240
tagtccaggt ttacaggaag aaatatgtta tctacattga acgggtgcag cgggaaaagg 300
ctaatggcac aactgtccac gtaggcattc accccagcaa ggtggttatc actaggctaa 360
aactggacaa agaccgcaaa aagatcctcg aacggaaagc caaatctcgc caagtaggaa 420
aggaaaaggg caaatacaag gaagaaacca ttgagaagat gcaggaataa agtaatctta 480
tatacaagct ttgattaaaa cttg 504

<210> 105
<211> 542
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 214, 241
<223> n = A,T,C or G

<400> 105
ggccgccctt tttttttttt tttattttta aaactttatt ttaaaaatat gagcatctat 60
tttaaaagtt ttgataatta ttgccattat tttcttgtga ttggtacaat ttaaaaataa 120
gtctatgttt tcacattgat tttaaaaaat atagcatgtt tgaattacaa atgattaagc 180
aaactctatt acttcatagc tgaccatctt ccanaaaatt cccacttaat tgaatactta 240
naaaaaaatg gccagtggcc gattgaaagg tatattaaaa ttaagggcag ttttaattct 300
gaagacaaat atcttcatgg aaatctattt gtaagcttct gagattgctg ctgatgagtg 360
tgcaattgag agcatagcag tggcagccac accaattcct aaattgtagg gtatgccttc 420
cagtatttca taatgatctg catcagttgt aaaggggaat tggtatattc acagactgta 480
gactttctgc atcagttgta aaggggaatt ggtatattca cagattgctg ctgagtcgac 540
gc 542

<210> 106
<211> 297
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 77, 180, 193, 211, 220, 291
<223> n = A,T,C or G

<400> 106
ggccgcgtcg actttttttt tttttttttt tttttttaa gtttttaaac tttttatttg 60
catattaaaa aaattgngca ttccaataat taaaatcatt tgaacaaaaa aaaaatggca 120
ctctgattaa actgcattac agcctgcagg acaccttggg ccagcttggt tttactctan 180
atttcactgt cgncccaccc cactttttcc nccccacttn ttccttcacc aacatgcaag 240
ttctttcctt ccctgccagc cagatagata gacagatggg aaaggcaggc ncggcct 297

<210> 107

<211> 636
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 170, 229, 398, 595
<223> n = A,T,C or G

<400> 107
ggccgccctt tttttttttt tttgggatat gacctttatt gaacttatcc accagagtgg 60
aaataatgtc tgtacaaaac caaatgtttg ttactataac ttctgcatca caattaaaat 120
ccaaacagtt ttttaaaaac agtcaactca atcaaaaccc actacttcan aatcaatagc 180
ttctttgaag ccacagtaac acttaaatat ggttaagact cgaatgcana aatttggttg 240
gttggaaagc taattaaact tccaacttgc tcaaatagaa ttacaaaaag gcaaaattgt 300
gtttttcaca gagatacagt ccactggaat caccaacact ggacagctgt tagagtattt 360
agagtcctga gataacaagg aatccaggca tcctttanac agtcttctgt tgtcctttct 420
tcccaatcag agatttgtgg atgtgtggaa tgacaccacc accagcaatt gtagccttga 480
tgagagaatc caattcttca tctccacgaa tagcaagttg caagtgacga ggggtaatac 540
gctttacctt taagtctttt gatgcatttc ctgccagttc aagtacctct gcggngaggt 600
actccaggat ggctgcgctg tacacagcgg gagtcg 636

<210> 108
<211> 571
<212> DNA
<213> Homo sapiens

<400> 108
ggccgcgtcg actcagagtt caagacaggc cccatgaagt ctgactgcac tgggatggag 60
aaatgaattt cttccccactg aaggaaactc tttctcattc gcagccaaga cgggagtgcc 120
actgttcctc tcttcactcc tgagatactg cttctggaag cgggtgtcac ttcctctcta 180
gtacctcttc tcttctctga agtgtgtgac tatctcctag tgtttaaatt tggcagttac 240
tcgccatgta tgtcagcata gaaaaggaaa tgtttttacc ttatctcctg tatgtatgat 300
agaacttaaa agaaatgtgc atttgttttc atagccccag cagagaaaat cctcttcata 360
gattaaatgt gctgctgtgg acaggaggga aaaaaaaccc tctacatatt gaaaggcacc 420
aaatgtaata tctgacactg ttaagatgcc caaaagagca aagttgtagt ggagatgcag 480
ggtcatttcc ccatgccatc cacagtgttt gttagtgagt ccacggctga cttgcagtga 540
taaagaaaag catggagctg tgtctgcaga c 571

<210> 109
<211> 570
<212> DNA
<213> Homo sapiens

<400> 109
ggccgcgtcg acggcgtcct cgtggaagtg acatcgtctt taaaccctgc ctggcaatcc 60
ctgacgcacc gccgtgatgc ccagggaaga cagggcgacc tggaagtcca actacttcct 120
taagatcatc caactattgg atgattatcc gaaatgtttc attgtgggag cagacaatgt 180
gggctccaag cagatgcagc agatccgcat gtcccttcgt gggaaggctg tggtgctgat 240
gggcaagaac accatgatgc gcaaggccat ccgagggcac ctggaaaaca acccagctct 300
ggagaaactg ctgcctcata tccgggggaa tgtgggcttt gtgttcacca aggaggacct 360
cactgagatc agggacatgt tgctggccaa taaggtgcca gctgctgccc gtgctggtgc 420
cattgcccca tgtgaagtca ctgtgccagc ccagaacact ggtctcgggc ccgagaagac 480
ctcctttttc caggctttag gtatcaccac taaaatctcc aggggcacca ttgaaatcct 540
gagtgatgtg cagctgatca agactggaga 570

<210> 110
<211> 514
<212> DNA
<213> Homo sapiens

<220>

<221> misc_feature
<222> 478
<223> n = A,T,C or G

<400> 110
ggccattttc ccagcatttg attctgtacg caaacatttc tgcaagcagg gttttggcag 60
ttcagaatta tgacgaagaa caacggagta aagggaaata ctcctcaaac tagtgccaaa 120
ataaagccgg aattttacat tttagagcaa tgcagtacct accagactat ttttctgtga 180
gcattctaac tgaaaaacca aacctctttc cagtgaaaat atttatgatt ttaattttat 240
actgttttat ttcacgttca gtgttatacg gagttgattt gtgcagtcac aaatcatgac 300
gttgccacga tgtatatcat ttatgttgac aggaaacata gttccaggat ctgagatcga 360
aaaggcaact ttaattggca ttagaatttt taaaaatgtg atttgatgta gatgctactt 420
ttatcttaaa acacaattaa aatgtcaaaa gttacttaaa agtaccatac ctcctaanta 480
tggagcaagg tttctcaacc tccgcaccat taac 514

<210> 111
<211> 498
<212> DNA
<213> Homo sapiens

<400> 111
ggccgcgtcg accgccgccg agtcgcgcgg aggcggaggc ttgggtgcgt tcaagattca 60
acttcacccg taacccaccg ccatggccga ggaaggcatt gctgctggag gtgtaatgga 120
cgttaatact gctttacaag aggttctgaa gactgccctc atccacgatg gcctagcacg 180
tggaattcgc gaagctgcca aagccttaga caagcgccaa gcccatcttt gtgtgcttgc 240
atccaactgt gatgagccta tgtatgtcaa gttggtggag gccctttgtg ctgaacacca 300
aatcaaccta attaaggttg atgacaacaa gaaactagga gaatgggtag gcctttgtaa 360
aattgacaga gaggggaaac cccgtaaagt ggttggttgc agttgtgtag tagttaagga 420
ctatggcaag gagtctcagg ccaaggatgt cattgaagag tatttcaaat gcaagaaatg 480
aagaaataaa tctttggc 498

<210> 112
<211> 641
<212> DNA
<213> Homo sapiens

<400> 112
ggccgcgtcg actgaagccg aaaccagcta gactttcctc cttcccgcct gcctgtagcg 60
gcgttgttgc cactccgcca ccatgttcga ggcgcgcctg gtccagggct ccatcctcaa 120
gaaggtgtcg gaggcactca aggacctcat caacgaggcc tgctgggata ttagctccag 180
cggtgtaaac ctgcagagca tggactcgtc ccacgtctct ttggtgcagc tcaccctgcg 240
gtctgagggc ttcgacacct accgctgcga ccgcaacctg gccatgggcg tgaacctcac 300
cagtatgtcc aaaatactaa aatgcgccgg caatgaagat atcattacac taagggccga 360
agataacgcg gataccttgg cgctagtatt tgaagcacca aaccaggaga aagtttcaga 420
ctatgaaatg aagttgatgg atttagatgt tgaacaactt ggaattccag aacaggagta 480
cagctgtgta gtaaagatgc cttctggtga atttgcacgt atatgccgag atctcagcca 540
tattggagat gctgttgtaa tttcctgtgc aaaagacgga gtgaaatttt ctgcaagtgg 600
agaacttgga aatggaaaca ttaaattgtc acagacaagt a 641

<210> 113
<211> 139
<212> DNA
<213> Homo sapiens

<400> 113
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgaggggc 139

<210> 114
<211> 361
<212> DNA

<213> Homo sapiens

<220>
<221> misc_feature
<222> 49, 89, 101, 141, 209, 253, 305, 324, 331, 360
<223> n = A,T,C or G

<400> 114
ggccgccctt tttttttttt tttttttttt ttttttttta attttaaana attttaatac 60
aaacttaata taaactattt cagtccctnt taacatgtaa nacactgact caaaatactt 120
ttataccgtt tttttcaagt nttgcacaat ataggtacaa aattaatatt tacgattaca 180
tttttcttcc ataatatata gcaaaaatnt ttaaactttt aacagaaaat acattttttt 240
gaaaaagcaa gtnttcgtac attttaattc caccactaaa ggaatatcct gtacacaatt 300
tttanaatag ttgatgtctt taanatggat nttttacaat ttcagtaaaa aaagtcgacn 360
c 361

<210> 115
<211> 297
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 268, 295
<223> n = A,T,C or G

<400> 115
ggccgccctt tttttttttt tttattcact aatacatttt atttgtgttc tctaatttaa 60
aattaccttt tcatcttgct tgattttcct tcagctaaat tagaaatttg tagtttttcc 120
cctaaaaaat tcaatggcat tctttcttat aaattacatt ctctgatttt cttgtcagcc 180
tgcttcaagg aaatccatgt gttcaaaatg cttgctcgca gtttgctcca taccaaatgg 240
ttgcttaacc caaatatctg agcagcanat tgagctgatc cttctggaga aagtncg 297

<210> 116
<211> 582
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 49, 266, 275, 314, 462, 507
<223> n = A,T,C or G

<400> 116
ggccgccctt tttttttttt ttttcatttt cttctgttta tttcaagana acaaagattc 60
aaccatcagt tctgtacaaa aacatggtgt gagagccatg ggatccttgg gccagccccc 120
ttcccgcact tgagccccgg gccccccctaa tttgccaaaa aaccaggaga agaccaaaaa 180
attcaaactc tggggaaaaa aattactatg aaaaaaaatc aggggagacc ttcctgggcc 240
tccctttctc cctatcccca atctanaaat ttagnggggg tcgcggttca tggccatggc 300
aggaggtggg gcanatgggt gtcggcagat ttagtgtttg gcaaccagtg gggctggggg 360
tgggatctgg gagggagccg aggggcctgg ggaagggaaa agatcttgga ccctgccccg 420
gcccatagga cactcaaaaa cactttataa aaattggggc cncagagtag aagaaaaacg 480
agtcatcaga atcaaaaact aaagagngga aagatttttt tttcttgtct aaaaggcaaa 540
aaactacaaa cagcccaagt cctgagctcc ccaagacctg ga 582

<210> 117
<211> 552
<212> DNA
<213> Homo sapiens

<400> 117
ggccgcgtcg acgaaatggg gcacctgtct agatcttgtc ctgataatcc caaaggactc 60

tatgctgatg gtggcggttg caaactttgt ggctctgtgg aacatttaaa gaaagattgc 120
cctgaaagtc agaattcaga gcgaatggtc acagttggtc gctgggcaaa gggaatgagt 180
gcagactatg aagaaatttt ggatgtacct aaaccgcaaa aacccaaaac aaaaatacct 240
aaagttgtta atttttgata acagctagca ctatcatgag ttactacctc attgttactt 300
tctaaaccag gcccgcttca cgagttagag ttgagctccc ctgtagccag gactatgctg 360
tagatatcag tatgatctgg gtgtggccaa aaacaatttt ctttattctg tctatcaaat 420
agtacttcta ccactgtttg gagaaaattg aagaaaagaa taagatgatt aaatgaattc 480
tctaaaagaa catattttaa gagacagaac ttagacataa ccaagtagtt gtatacctga 540
ttgtaacaat ca 552

<210> 118
<211> 588
<212> DNA
<213> Homo sapiens

<400> 118
ggccgcgtcg acgcattctc aaccgcttgg tccagtttgt aaaagacaga atttcggtgg 60
tgcaggccct ggttctgacc caacagtatc accaactcaa atcaatagat ccagaagaag 120
tagaatcgcg tgaataaaag attttattca gtttccagaa agagggggga atgaaagacc 180
ccaccataag gcttagcaag ctagctgcag taacgccatt ttgcaaggca tgaaaaagta 240
ccagagctga gttctcaaaa gtcacaagga agtttagtta aagaataagg ctgaacaaaa 300
ctgggacagg ggccaaacag gatatctgtg gtcgagcacc tgggccccgg ctcagggcca 360
agaacagatg gtactcagat aaagcgaaac tagcaacagt ttctggaaag tcccacctca 420
gtttcaagtt ccccaaaaga ccgggaaaaa ccccaagcct tatttaaact aaccaatcag 480
ctcgcttctc gcttctgtaa ccgcgctttt tgctccccag ccctataaaa agggtaaaaa 540
ccccacactc ggcgcgccag tcatccgata gactgagtcg cccgggta 588

<210> 119
<211> 590
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 584
<223> n = A,T,C or G

<400> 119
ggccgcgtcg accgccgagc gatgggcatc tctcgggaca actggcacaa gcgccgcaaa 60
accgggggca agagaaagcc ctaccacaag aagcggaagt atgagttggg gcgcccagct 120
gccaacacca agattggccc ccgccgcatc cacacagtcc gtgtgcgggg aggtaacaag 180
aaataccgtg ccctgaggtt ggacgtgggg aatttctcct ggggctcaga gtgttgtact 240
cgtaaaacaa ggatcatcga tgttgtctac aatgcatcta ataacgagct ggttcgtacc 300
aagaccctgg tgaagaattg catcgtgctc atcgacagca caccgtaccg acagtggtac 360
gagtcccact atgcgctgcc cctgggccgc aagaagggag ccaagctgac tcctgaggaa 420
gaagagattt taaacaaaaa acgatctaaa aaaattcaga agaaatatga tgaaaggaaa 480
aagaatgcca aaatcagcag tctcctggag gagcagttcc agcagggcaa gcttcttgcg 540
tgcatcgctt caaggccggg acagtgtggc cgagcagatg gctntgtgct 590

<210> 120
<211> 619
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 170, 229, 398, 541, 589, 595
<223> n = A,T,C or G

<400> 120
ggccgccctt tttttttttt tttgggatat gacctttatt gaacttatcc accagagtgg 60
aaataatgtc tgtacaaaac caaatgtttg ttactataac ttctgcatca caattaaaat 120

ccaaacagtt ttttaaaaac agtcaactca atcaaaaccc actacttcan aatcaatagc 180
ttctttgaag ccacagtaac acttaaatat ggttaagact cgaatgcana aatttggttg 240
gttggaaagc taattaaact tccaacttgc tcaaatagaa ttacaaaaag gcaaaattgt 300
gtttttcaca gagatacagt ccactggaat caccaacact ggacagctgt tagagtattt 360
agagtcctga gataacaagg aatccaggca tcctttanac agtcttctgt tgtcctttct 420
tcccaatcag agatttgtgg atgtgtggaa tgacaccacc accagcaatt gtagccttga 480
tgagagaatc caattcttca tctccacgaa tagcaagttg caagtgacga ggggtaatac 540
nctttacctt taagtctttt gatgcatttc ctgccagttc aagtacctnt gcggngaggt 600
actccaggat ggctgcgct 619

<210> 121
<211> 627
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 483, 582
<223> n = A,T,C or G

<400> 121
ggccgcgtcg acaccatggc ggctgggacc ctgtacacgt atcctgaaaa ctggagggcc 60
ttcaaggctc tcatcgctgc tcagtacagc ggggctcagg tccgcgtgct ctccgcacca 120
ccccacttcc attttggcca aaccaaccgc accoctgaat ttctccgcaa atttcctgcc 180
ggcaaggtcc cagcatttga gggtgatgat ggattctgtg tgtttgagag caacgccatt 240
gcctactatg tgagcaatga ggagctgcgg ggaagtactc cagaggcagc agcccaggtg 300
gtgcagtggg tgagctttgc tgattccgat atagtgcccc cagccagtac ctgggtgttc 360
cccaccttgg gcatcatgca ccacaacaaa caggccactg agaatgcaaa ggaggaagtg 420
aggcgaattc tggggctgct ggatgcttac ttgaagacga ggacttttct ggtgggcgaa 480
cgngtgacat tggctgacat cacagttgtc tgcaccctgt tgtggctcta taagcaggtt 540
ctagagcctt ctttccgcca ggcctttccc aataccaacc gntggttcct cacctgcatt 600
aaccagcccc agttccgggc tgtcttg 627

<210> 122
<211> 449
<212> DNA
<213> Homo sapiens

<400> 122
ggccgcgtcg acgcgagtgg gagcaccagg atctcgggct cggaacgaga ctgcacggat 60
tgttttaaga aaatggcaga caaaccagac atgggggaaa tcgccagctt cgataaggcc 120
aagctgaaga aaacggagac gcaggagaag aacaccctgc cgaccagaga ccattgagca 180
ggagaagcgg agtgaaattt cctaagatcc tggaggattt cctacccccg tcctcttcga 240
gaccccagtc gtgatgtgga ggaagagcca cctgcaagat ggacacgagc cacaagctgc 300
actgtgaacc tgggcactcc gcgccgatgc caccggcctg tgggtctctg aagggacccc 360
cccccaatcg gactgccaaa ttctccggtt tgccccggga tattatagaa aattatttgt 420
atgaataatg aaaataaaac acacctcgt 449

<210> 123
<211> 541
<212> DNA
<213> Homo sapiens

<400> 123
ggccgcgtcg acgcgggctg gagaagcggg tcctacgcac gctttgttgt cgcgctttgc 60
ctccgtcctt gcccctactc ccgccttacc tgacttcctt ttcggaggaa gatccttgag 120
cagccgacgt tgggacaaag gatttggaga aacccagggc taaagtcacg tttttcctcc 180
tttaagactt acctcaacac ttcactccat ggcagttccc gagacccgcc ctaaccacac 240
tatttatatc aacaacctca atgagaagat caagaaggat gagctaaaaa agtccctgta 300
cgccatcttc tcccagtttg gccagatcct ggatatcctg gtatcacgga gcctgaagat 360
gaggggccag gcctttgtca tcttcaagga ggtcagcagc gccaccaacg ccctgcgctc 420
catgcagggt ttccctttct atgacaaacc tatgcgtatc cagtatgcca agaccgactc 480

agatatcatt gccaagatga aaggcacctt cgtggagcgg gaccgcaagc gggagaagag 540
g 541

<210> 124
<211> 600
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 243, 527, 588
<223> n = A,T,C or G

<400> 124
ggccgccctt tttttttttt tttttggtag tgaatacttt attttgttgt aaacaagtta 60
gttttgaggg tatttcctcg tggtcctcct gccgtcactc gtccccatgt tccaatgatg 120
ctgatcaact gctttattca gtttcccatc tttcttcttg cccagtcatc gtagcctttc 180
ttttttttaaa cacatgatcc ctagtactca tctttggagg acaaaaggct ttccatatgt 240
tanaaaaatt tgaatctcat agtactcaca acaatgagca gcattgtaag ttgtgatgca 300
ttcatttgga ttggaacatt ctcaatcagt ccttccactc taagtaaata tttgtttctc 360
acagaacaca aggcagttca aagggcctct tgttagagat ttataggtgt atgaatggga 420
aacatcatac aagcagtgaa aacaaaaatc tttccaggtt gtcggatttt ctccttcttg 480
gtcttataaa aagcaactag acatctttaa tttaaaaaat acatgcncat atatacaata 540
gtgattggaa tgttattttt atccaaaaca ttatagagtt tatctcanat atactgagta 600

<210> 125
<211> 619
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 515, 536, 596
<223> n = A,T,C or G

<400> 125
ggccgcgtcg acaggcgtcc tcgtggaagg cccgggaccg cgggatgggt gtcggcgtga 60
ccaggcctga gctccctgtc tctcctcagt gacatcgtct ttaaaccctg cgtggcaatc 120
cctgacgcac cgccgtgatg cccagggaag acagggcgac ctggaagtcc aactacttcc 180
ttaagatcat ccaactattg gatgattatc cgaaatgttt cattgtggga gcagacaatg 240
tgggctccaa gcagatgcag cagatccgca tgtcccttcg tgggaaggct gtggtgctga 300
tgggcaagaa caccatgatg cgcaaggcca tccgagggca cctggaaaac aacccagctc 360
tggagaaact gctgcctcat atccgggggga atgtgggctt tgtgttcacc aaggaggacc 420
tcactgagat cagggacatg ttgctggcca ataaggtgcc agctgctgcc cgtgctggtg 480
ccattgcccc atgtgaagtc actgtgccag cccanaacac tggtctcggg cccganaaga 540
cctccttttt ccaggctttt aggtatcacc actaaaatct ccaggggcac cattgnaatc 600
ctgagtgatg tgcagctga 619

<210> 126
<211> 613
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 561
<223> n = A,T,C or G

<400> 126
ggccgcgtcg acctgttgga gccgctgtgg ttgctgtccg cggagtggaa gcgcgtgctt 60
ttgtttgtgt ccctggccat ggcgctgcag ctctcccggg agcagggaat caccctgcgc 120

gggagcgccg aaatcgtggc cgagttcttc tcattcggca tcaacagcat tttatatcag 180
cgtggcatat atccatctga aacctttact cgagtgcaga aatacggact caccttgctt 240
gtaactactg atcttgagct cataaaatac ctaaataatg tggtggaaca actgaaagat 300
tggttataca agtgttcagt tcagaaactg gttgtagtta tctcaaatat tgaaagtggt 360
gaggtcctgg aaagatggca gtttgatatt gagtgtgaca agactgcaaa agatgacagt 420
gcacccagag aaaagtctca gaaagctatc caggatgaaa tccgttcagt gatcagacag 480
atcacagcta cggtgacatt tctgccactg ttggaagttt cttgttcatt tgatctgctg 540
atttatacag acaaagattt ngttgtacct gaaaaatggg aagagtcggg accacagttt 600
attaccaatt ctg 613

<210> 127
<211> 449
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 58
<223> n = A,T,C or G

<400> 127
ggccgcgtcg acttttaaag aagtaagcct ttatttcctt gttttgcaaa taaaactngc 60
taagttggtt gctttttggt gattagtcaa agagaccaaa tcccatatcc tcgtccgact 120
cctccgactc ttccttggct tcaaccttag ctggggctgc agcagcagca ggagcagctg 180
tggtggcagc agccacaggg gcagcagcca caaaggcaga tggatcagcc aagaaggcct 240
tgaccttttc agcaagtggg aaggtgtaat ccgtctccac agacaaggcc aggactcgtt 300
tgtacccgtt gatgatagaa tggggtactg atgcaacagt tgggtagcca atctgcagac 360
agacactggc aacattgcgg acaccctcca ggaagcgaga atgcagagtt tcctctgtga 420
tatcaagcac ttcagggttg tagatgctg 449

<210> 128
<211> 387
<212> DNA
<213> Homo sapiens

<400> 128
ggccgcgtcg acggaaaaac acccgtggag ccggaggtgg caattcaccg aattcgaatc 60
accctaacaa gccgcaacgt aaaatccttg gaaaaggtgt gtgctgactt gataagaggc 120
gcaaaagaaa agaatctcaa agtgaaagga ccagttcgaa tgcctaccaa gactttgaga 180
atcactacaa gaaaaactcc ttgtggtgaa ggttctaaga cgtgggatcg tttccagatg 240
agaattcaca agcgactcat tgacttgcac agtccttctg agattgttaa gcagattact 300
tccatcagta ttgagccagg agttgaggtg gaagtcacca ttgcagatgc ttaagtcaac 360
tattttaata aattgatgac cagttgt 387

<210> 129
<211> 509
<212> DNA
<213> Homo sapiens

<400> 129
ggccgcgtcg acgtctgagg gggcttgtag gtggctctgg ctgaaacagg cgcctgcgag 60
agtctgtagg agggaaaccg ccatggacga tcagggttgc cctcggtgta agaccaccaa 120
atatcggaac ccctccttga agctgatggt gaatgtgtgc ggacacactc tctgtgaaag 180
ttgtgtagat ttactgtttg tgagaggagc tggaaactgc cctgagtgtg gtactccact 240
cagaaagagc aacttcaggg tacaactctt tgaagatccc actgttgaca aggaggttga 300
gatcaggaaa aaagtgctaa agatatacaa taaaagggaa gaagattttc ctagtctaag 360
agaatacaat gatttcttgg aagaagtgga agaaattgtt ttcaacttga ccaacaatgt 420
ggatttggac aacaccaaaa agaaaatgga gatataccaa aaggaaaaca aagatgttat 480
tcagaaaaat aaattaaagc tgactcgag 509

<210> 130
<211> 422

<212> DNA
<213> Homo sapiens

<400> 130
ggccgcgtcg accttagcgc cattttttg gaaacctctg cgccatgaga gccaagtgga 60
ggaagaagcg aatgcgcagg ctgaagcgca aaagaagaaa gatgaggcag aggtccaagt 120
aaaccgctag cttgttgcac cgtggaggcc acaggagcag aaacatggaa tgccagacgc 180
tggggatgct ggtacaagtt gtgggactgc atgctactgt ctagagcttg tctcaatgga 240
tctagaactt catcgccctc tgatcgccga tcacctctga gacccacctt gctcataaac 300
aaaatgccca tgttggtcct ctgccctgga cctgtgacat tctggactat ttctgtgttt 360
atttgtggcc gagtgtaaca accatataat aaatcacctc ttccgctgtt ttagctgaag 420
aa 422

<210> 131
<211> 483
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 79, 124, 182, 189, 261, 264, 362, 416, 427, 468
<223> n = A,T,C or G

<400> 131
ggccgccctt tttttttttt tttgtaaagc tctgccataa acttctagcg tgtgccaatg 60
gtcacctgcc acactcgcnc caggttgtcc gtgtagccag caaacagagt ctggccatca 120
gcanaccagg ccagggaggt gcactggggt ggttctgcct tgctgctggt actgataact 180
tnttgcttna gttcatctac aatgatcttt ccctctaaat cccagatctt gatgctgggg 240
cctgtggcag cacacagcca ntancggtta gggctgaagc acagggcgtt gatgatgtcc 300
ccaccatcta gcgtgtaaag gtgtttgcct tcgttgagat cccataacat ggcctggcca 360
tncttgcctc cagaagcaca gagggatcca tctggagaga cagtcaccgt gttcanatag 420
cctgtgnggc caatgtggtt ggtcttcagc ttgcagttag ccaggttnca taccttgacc 480
agc 483

<210> 132
<211> 640
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 604
<223> n = A,T,C or G

<400> 132
ggccgcgtcg actttttaag tttttaaact ttttatttgc atattaaaaa aattgtgcat 60
tccaataatt aaaatcattt gaacaaaaaa aaaatggcac tctgattaaa ctgcattaca 120
gcctgcagga caccttgggc cagcttggtt ttactctaga tttcactgtc gtcccacccc 180
acttcttcca ccccacttct tccttcacca acatgcaagt tctttccttc cctgccagcc 240
agatagatag acagatggga aaggcaggcg cggccttcgt tgtcagtagt tctttgatgt 300
gaaaggggca gcacagtcat ttaaacttga tccaacctct ttgcatctta caaagttaaa 360
cagctaaaag aagtaaaata agaaggcaat gcttgtggaa tgtacagtgc atattggcgg 420
cgcacgcctc attacgattc gcctgcttgc ttctcctgtt caatcgtttc tttggaaggc 480
agtggatttt tctcttgcgt ctctgtcttc ttcagtttcg acttatcgaa tttctcgatc 540
tcagccatat cgggtttgtc agacatggtt gcggaggaaa agcgaagcga ggcgcacgag 600
tacnagcgaa gtctggtctg cgcagtggcc acgtcgacgc 640

<210> 133
<211> 434
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 51, 82, 120, 181, 418
<223> n = A,T,C or G

<400> 133
ggccgccctt tttttttttt ttttcaggtt aagtaataaa aatttattga naattcctgg 60
gttggtgttt atctcctccc anccttgagg gagggaacaa cactgtagga aatcactgan 120
aaatcacgca ctgtccccaa cagccccagt taacacaggg aggaggaaag taattcccca 180
naaaaggggc tagtcttcag tcttccttaa tccaagaggg gttcagggaa ccggtgtggg 240
ggaccatcgc atgatactgg ggcggggtag ggctgtgctg gacccctggc tggctcctca 300
aaaactggag aagcagatcc acttcctctg ggggtggagt tcttggtgac taggctcatt 360
tcttaccctt gatgaggctg tcacttcccc tggtgaaact ttcatcctgt aggttcanca 420
caaggttgtc agct 434

<210> 134
<211> 518
<212> DNA
<213> Homo sapiens

<400> 134
ggccgcgtcg acgtttataa tgctacaaaa tgaacaggag ataagtcaac tgaaaaaaga 60
aattgaaaga acacaacaaa ggatgaaaga aatggagagt gttatgaaag agcaagaaca 120
gtacattgcc actcagtaca aggaggccat agatttgggg caagaattga ggctgacccg 180
ggagcaggtg cagaactctc atacagaatt ggcagaggct cgtcatcagc aagtccaagc 240
acagagagaa atagaaaggc tctctagtga actggaggat atgaagcaac tctctaaaga 300
gaaagatgct catggaaacc atttagctga agaactgggg gcttctaaag tacgtgaagc 360
tcatttagaa gcaagaatgc aagcagaaat caagaaattg tcagcagaag tagaatctct 420
caaagaagct tatcatatgg agatgatttc acatcaagag aaccatgcaa agtggaagat 480
ttctgctgac tctcaaaagt cttctgttca gcaactaa 518

<210> 135
<211> 77
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 66, 75
<223> n = A,T,C or G

<400> 135
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 60
tttttnaccc acatnaa 77

<210> 136
<211> 531
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 517
<223> n = A,T,C or G

<400> 136
ggccgcgtcg acgattccgt cctgcgcggt tgttctctgg agcagcgttc ttttatctcc 60
gtccgccttc tctcctacct aagtgcgtgc cgccacccga tggaagattc gatggacatg 120
gacatgagcc ccctgaggcc ccagaactat cttttcggtt gtgaactaaa ggccgacaaa 180
gattatcact ttaaggtgga taatgatgaa aatgagcacc agttatcttt aagaacggtc 240
agtttagggg ctggtgcaaa ggatgagttg cacattgttg aagcagaggc aatgaattac 300
gaaggcagtc caattaaagt aacactggca actttgaaaa tgtctgtaca gccaacggtt 360

tcccttgggg gctttgaaat aacaccacca gtggtcttaa ggttgaagtg tggttcaggg 420
ccagtgcata ttagtggaca gcacttagta gctgtggagg aagatgcaga gtcagaagat 480
gaagaggagg aggatgtgaa actcttaagt atatctngaa agcggtctgc c 531

<210> 137
<211> 435
<212> DNA
<213> Homo sapiens

<400> 137
ggccgcgtcg acgtcgcatt tggccgcctc cctaccggcc ctctgctgcc agctccaagc 60
ccagccctca gccatggcat gccccctgga tcaggccatt ggcctcctcg tggccatctt 120
ccacaagtac tccggcaggg agggtgacaa gcacaccctg agcaagaagg agctgaagga 180
gctgatccag aaggagctca ccattggctc gaagctgcag gatgctgaaa ttgcaaggct 240
gatggaagac ttggaccgga acaaggacca ggaggtgaac ttccaggagt atgtcacctt 300
cctgggggcc ttggctttga tctacaatga agccctcaag ggctgaaaat aaatagggaa 360
gatggagaca ccctctgggg gtcctctctg agtcaaatcc agtggtgggt aattgtacaa 420
taaatttttt ttggt 435

<210> 138
<211> 487
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 477
<223> n = A,T,C or G

<400> 138
ggccgcgtcg acgctgggtg tggggtgcgt tgggctggtg gggaggccta gtttgggtgc 60
aagtaggtct gattgagctt gtgttgtgct gaagggacag ccctgggtct aggggagaga 120
gtccctgagt gtgagacccg ccttccccgg tcccagcccc tcccagttcc cccagggacg 180
gccacttcct ggtccccgac gcaaccatgg ctgaagaaca accgcaggtc gaattgttcg 240
tgaaggctgg cagtgatggg gccaagattg ggaactgccc attctcccag agactgttca 300
tggtactgtg gctcaaggga gtcaccttca atgttaccac cgttgacacc aaaaggcgga 360
ccgagacagt gcagaagctg tgcccagggg ggcagctccc attcctgctg tatggcactg 420
aagtgcacac agacaccaac aagattgagg aatttctgga ggcagtgctg tgccctncca 480
ggtaccc 487

<210> 139
<211> 471
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 31, 95, 105, 114, 152, 155, 200, 213, 230, 321, 344, 360,
371, 390
<223> n = A,T,C or G

<400> 139
ggccgccttt tttttttttt tttttttttt ngactgtcct aaattgttta ttaagtatga 60
attttacaaa ctttacttat attagcggta acggnggagc tgganagtat tgcnccttct 120
ccaagctgcc cggcgagagc caccaatagt gnggnggaac ttgtggccct ttccaaggcc 180
acggctcttt cggcctgcan atgtcagccc acncatctcc ctgtgcttgn ggactggttt 240
ggtgatccac tgggtgtcag gatttcttct gatagcttta tggaatggat caatgaggat 300
aacctcaaaa aatttgtatg nggaatcttc accaacccag taanaattca ggactctcan 360
agccccacag nggcgtccag ctcgctcctn tgcaacggac tgaaggcttc gagcaaactt 420
tagctggtta acaccatgat ggacaggctt gccgtaagtt gcacccttag g 471

<210> 140

<211> 519
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 170, 229, 398
<223> n = A,T,C or G

<400> 140
ggccgccctt tttttttttt tttgggatat gacctttatt gaacttatcc accagagtgg 60
aaataatgtc tgtacaaaac caaatgtttg ttactataac ttctgcatca caattaaaat 120
ccaaacagtt ttttaaaaac agtcaactca atcaaaaccc actacttcan aatcaatagc 180
ttctttgaag ccacagtaac acttaaatat ggttaagact cgaatgcana aatttggttg 240
gttggaaagc taattaaact tccaacttgc tcaaatagaa ttacaaaaag gcaaaattgt 300
gtttttcaca gagatacagt ccactggaat caccaacact ggacagctgt tagagtattt 360
agagtcctga gataacaagg aatccaggca tcctttanac agtcttctgt tgtcctttct 420
tcccaatcag agatttgtgg atgtgtggaa tgacaccacc accagcaatt gtagccttga 480
tgagagaatc caattcttca tctccacgaa tagcaagtt 519

<210> 141
<211> 478
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 28, 48, 119, 122, 181, 184, 224, 256, 266, 269, 327, 338,
363, 379, 418, 466, 469
<223> n = A,T,C or G

<400> 141
ggccgccctt tttttttttt ttttcagngg aaaataactt ttattganac cccaccaact 60
gcaaaatctg ttcctggcat taagctcctt cttcctttgc aattcggtct ttcttcagng 120
gncccatgaa tgctttcttc tcctccatgg tctggaagcg gccatggcca aacttggagg 180
nggngtcaat gaacttaagg tcaatcttct ccagagcccg ccgnttcgtc tgcaccagca 240
aggacttgcg gagggngagc acccgnttnt tggttcccac cacacagcct ttcagcatga 300
caaagtcatt ggtcacttca ccatagngga caaagccncc cagagggttg atgctcttgt 360
canataggtc atagtcagng gaggcattgt tcttgatcag cttgccgtcc ttgataangg 420
tagccctggc caatcttata aatcttcttg ttgatctcag ggcggngang gtagcctt 478

<210> 142
<211> 550
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 513, 543
<223> n = A,T,C or G

<400> 142
ggccgcgtcg accagctgtc ggctggaagg aactggtctg ctcacacttg ctggcttgcg 60
catcaggact ggctttatct cctgactcac ggtgcaaagg tgcactctgc gaacgttaag 120
tccgtcccca gcgcttggaa tcctacggcc cccacagccg gatcccctca gccttccagg 180
tcctcaactc ccgcggacgc tgaacaatgg cctccatggg gctacaggta atgggcatcg 240
cgctggccgt cctgggctgg ctggccgtca tgctgtgctg cgcgctgccc atgtggcgcg 300
tgacggcctt catcggcagc aacattgtca cctcgcagac catctgggag ggcctatgga 360
tgaactgcgt ggtgcagagc accggccaga tgcagtgcaa ggtgtacgac tcgctgctgg 420
cactgccgca ggacctgcag gcggcccgcg ccctcgtcat catcagcatc atcgtggctg 480
ctctgggcgt gctgctgtcc gtggtggggg gcnagtgtac caactgcctg gaggatgaaa 540
gcnccaaggc 550

<210> 143
<211> 568
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 62, 74, 231, 357, 405, 499, 510, 532, 564
<223> n = A,T,C or G

<400> 143
ggccgccctt tttttttttt tttttttttt acactttaac aaatctactt taattctaaa 60
anaaattaat ctanaactgt cagtaataca caacatactt ttatgtttct tttataggta 120
tctatctaat aaaagtttat ttgtgtatgt gcaatgcata actctatctt agatatgaat 180
cctaacagga tgaaaatact ttcttgcaac tactttatgc ttatgaaagg ngtgaacttg 240
caatgtcctc ctgtcttaaa cccaagttga cagtgccctc tcaaaacttt tcataaataa 300
tgacctaatt tcatttaaaa aatggtttca gcaaatatga aaatagaaag tccgttnttt 360
gtccatttgt aatatgagaa aaaaagatga tacattcctc tacanaaaaa gtgggtttag 420
agaacagttc tggtagtatt tcacatggta aagtatcaaa agatctaatg agcagccccc 480
ttgctcaggg aaagacagng atttcaatgn gtttctcttc cgaattgctt antaactcca 540
agtgattttc aaattggggg gcanatta 568

<210> 144
<211> 513
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 61, 87, 127, 171, 190, 209, 255, 265, 272, 277, 286, 291, 298, 406, 426, 460, 482, 502, 511
<223> n = A,T,C or G

<400> 144
ggccgccctt tttttttttt tttttttttt ttttttgaat caaaagcagg gtttattttt 60
ntatcaaatc cccaatccat gttccancca atggatgaag ggtgaatcaa gccccacata 120
gactctnggt aaaaacaatt ctaactttct aaaaaaaaaa aaaagccaac ncactttttt 180
ctttcttttn aaaaagctcc caggccttng ggaacagctg aaacaaattc atatcctgac 240
taggtctgtt ttctnttagg tattnggatg gnccctntct gctgcnactt ntgcacanat 300
gaggcactga taatggcctg caggtcactc acaatcctag ctccacatca ctccatggtt 360
tgataaccta aaaccacgtt atgatttcca tttataatgc cctaanaaca gctgaaaaga 420
tctgtnttaa attctgcaaa tctttattga gtgccaactn tttgctgggc acaggctagg 480
cnctgattct gctggttctg anaaacataa ngg 513

<210> 145
<211> 296
<212> DNA
<213> Homo sapiens

<400> 145
ggccgccctt tttttttttt tttctttttc ttgattttct tttaaaaatc aaggtgcctt 60
tttagccagt aggtagtgcc tcagtctcat aaaaatcacc aaggagagag taaacaaaaa 120
actaactaga ataataaaat aattttttaa attccaattc tgctccaatc ttttaatatt 180
caaaattcct tggtcatgtt tgcgtacatc ccatgttttt aagcaatgtc ctgagtaggt 240
aatgggaatt ggtgtctctc aaactgtaaa attaaaataa gggttcacag tggctc 296

<210> 146
<211> 537
<212> DNA
<213> Homo sapiens

<400> 146
ggccgcgtcg accatgccta tcatatagta aaacccagcc catgacccct aacaggggcc 60
ctctcagccc tcctaatgac ctccggccta gccatgtgat ttcacttcca ctccataacg 120
ctcctcatac taggcctact aaccaacaca ctaaccatat accaatgatg gcgcgatgta 180
acacgagaaa gcacatacca aggccaccac acaccacctg tccaaaaagg ccttcgatac 240
gggataatcc tatttattac ctcagaagtt tttttcttcg caggattttt ctgagccttt 300
taccactcca gcctagcccc taccccccaa ttaggagggc actggccccc aacaggcatc 360
accccgctaa atcccctaga agtcccactc ctaaacacat ccgtattact cgcatcagga 420
gtatcaatca cctgagctca ccatagtcta atagaaaaca accgaaacca aataattcaa 480
gcactgctta ttacaatttt actgggtctc tattttaccc tcctacaagc ctcagag 537

<210> 147
<211> 414
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 155, 172, 403
<223> n = A,T,C or G

<400> 147
ggccgccctt tttttttttt tttttattgt tcaagcagaa aacaagctgc ttttattaca 60
gtatgatgtc atgactcatt tgtaacagat ccagcctcag ggacagccct gtaaggcagc 120
aagtggggct ggctccaaat gggtatgagt ctcanaatct ttggtaaggc anaactgaac 180
tgggctgaga ggtggtctta aggcctgggc aggctctatt ctctctggac tggctgcagc 240
ctgcagtcta ggagaggccc agtacagcct ggagctcctg agccttgtca acaggcagtg 300
agcccagagc tgcttgaaag ctgtcggtgt gctgtttggc caggaacgtc aggagcagca 360
acagtgcggc cttggtgtct ggtgggatct tgttgtcagc canaatgtcg acgc 414

<210> 148
<211> 507
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 437, 452, 456, 487
<223> n = A,T,C or G

<400> 148
ggccgcgtcg acggtaagcc aagatgggtg catacaagta catccaggag ctatggagaa 60
agaagcagtc tgatgtcatg cgctttcttc tgagggtccg ctgctggcag taccgccagc 120
tctctgctct ccacagggct ccccgcccca cccggcctga taaagcgcgc cgactgggct 180
acaaggccaa gcaaggttac gttatatata ggattcgtgt tcgccgtggt ggccgaaaac 240
gcccagttcc taagggtgca acttacggca agcctgtcca tcatggtgtt aaccagctaa 300
agtttgctcg aagccttcag tccgttgcag aggagcgagc tggacgccac tgtggggctc 360
tgagagtcct gaattcttac tgggttggtg aagattccac atacaaattt tttgaggtta 420
tcctcattga tccattncat aaagctatca gnaganatcc tgacacccag tggatcacca 480
aaccagncca caagcacagg gagatgc 507

<210> 149
<211> 501
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 194, 280, 435
<223> n = A,T,C or G

<400> 149

ggccgccctt ttttttttt tttgagatgg agtctcactc tgttgcccag actggagtac 60
agtagcatga tcttggctca ctgcaacctc cacctcctgg gttcaagtga ttctcctgcc 120
tcagcctccc aagtagctgg gactacaggt gcccgccacc atgcctggct aatttttata 180
tttttagtag aggnggggtt tcaccatgtt ggccaggctg gtctcgaact cctgacctca 240
aatgatccac agccatgagt cactgcgcct ggcctaaaan aactaaatct tgtagtagga 300
agttgtatgt aattacactg ctatattacc tacagctttg tgtatgtgat ctgatctttc 360
tttgcagggc aaatgcaaga aaataggaga caaaggacaa ggtagagcaa atcttcaagc 420
acacagaaat aatgngggga gtaaaagctg aaactacagg caggagtagg ggggcaaaaa 480
tcaaagctgt ctgccattga t 501

<210> 150
<211> 552
<212> DNA
<213> Homo sapiens

<400> 150
ggccgcgtcg accatttctt caaacaatgc agtgatagaa ctggcaaaat ctccagagag 60
ccatggacat tggagagagt ggtattatgg tgtaaacaac gattctttgg aggaaaggtt 120
atttgtcaat gaagaaaatg ttaatgagtt tcttgaagag gtcctgagct ctccattcaa 180
acagtctatg tccttgaccc caccattaat tgaagttctt caagttactg ataataagat 240
tcaaattaat gcaaagttgc aagaatgtag taactctgat cagctacaag gaaaggagga 300
aagagtaaat gaagaaagtc atctaactga aaaggaatat atagaacatt gtaacacccc 360
tacaactgat tctgattcat ctatagcagt taaagcacta caaatagata gctttggttt 420
agttacatgc tttcaacaag agtctcttga tgtttctcaa atgatacttg gaaaatctca 480
gcaacctgag tcaaaaatgc aatctgaatt tataaaagaa aaaagtgcta cttgttcaaa 540
tgaggaaaaa ga 552

<210> 151
<211> 442
<212> DNA
<213> Homo sapiens

<400> 151
ggccgcgtcg acgggactcg cgtcggttgg cgactcccgg acgtaggtag tttgttgggc 60
cgggttctga ggccttgctt ctctttactt ttccactcta ggccacgatg ccgcagtacc 120
agacctggga ggagttcagc cgcgctgccg agaagcttta cctcgctgac cctatgaagg 180
cacgtgtggt tctcaaatat aggcattctg atgggaactt gtgtgttaaa gtaacagatg 240
atttagtttg tttggtgtat aaaacagacc aagctcaaga tgtaaagaag attgagaaat 300
tccacagtca actaatgcga cttatggtag ccaaggaagc ccgcaatgtt accatggaaa 360
ctgagtgaat ggtttgaaat gaagactttg tcgtgtactt aggaagtaaa tatcttttga 420
attagagaaa gtgttgggac ag 442

<210> 152
<211> 154
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 110, 123, 127, 128, 129
<223> n = A,T,C or G

<400> 152
ggccgccctt ttttttttt ttttttttt ttttttttt ttttttttt ttttttttt 60
tttttttttt ttttttttt ttttttttt ttttttttt tttttttttn gggggggccca 120
aantttnnng aaaaaaaacc cccccaaaa aaaa 154

<210> 153
<211> 515
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 457
<223> n = A,T,C or G

<400> 153
ggccgcgtcg accccgggtg gcggtggcag ctgcgaaacc cagggagccg atgccacgtg 60
acccaatgtg gacttctttt aaacctttct aatgcccata acccagcctc agacccatgg 120
agcccacgag agactgcccg ctgttcgggg gcgccttttc cgccatcctc cccatggggg 180
ccattgacgt aagcgacctc cgaccggtcc cggacaatca agaagttttc tgccatcccg 240
tgacggacca gagcctgata gtggaacttc tcgagctgca ggcccacgta cggggcgaag 300
cggctgcgcg gtaccacttt gaggatgttg gtggcgtgca gggggctagg gctgtccatg 360
tggagtctgt tcagcctctc agtttggaga acctggccct gaggggccgc tgtcaagaag 420
cctgggtcct ctctggcaag cagcagatag ctaaggnaaa ccagcaggta gcaaaggacg 480
tgacacttca tcaggccttg ctgaggctgc cccag 515

<210> 154
<211> 467
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 438
<223> n = A,T,C or G

<400> 154
ggccgcgtcg acgcggcagc catcaggtaa gccaagatgg gtgcatacaa gtacatccag 60
gagctatgga gaaagaagca gtctgatgtc atgcgctttc ttctgagggt ccgctgctgg 120
cagtaccgcc agctctctgc tctccacagg gctccccgcc ccacccggcc tgataaagcg 180
cgccgactgg gctacaaggc caagcaaggt tacgttatat ataggattcg tgttcgccgt 240
ggtggccgaa aacgcccagt tcctaagggt gcaacttacg gcaagcctgt ccatcatggt 300
gttaaccagc taaagtttgc tcgaagcctt cagtccgttg cagaggagcg agctggacgc 360
cactgtgggg ctctgagagt cctgaattct tactgggttg gtgaagattc cacatacaaa 420
tttttgagg gtatcctnat tgatccattc cataaagcta tcagaag 467

<210> 155
<211> 55
<212> DNA
<213> Homo sapiens

<400> 155
ggccgcgtcg acattttaat accgctacta aaaattaagt tactttctaa actgg 55

<210> 156
<211> 539
<212> DNA
<213> Homo sapiens

<400> 156
ggccgcgtcg acggtggtcc tacagaaccg gagaggatta gatctgctgt tcctaaaaga 60
aggaggatta tgtgctgccc taaaagaaga atgctgtttc tatgcagacc acactggcgt 120
agtaagggat agcatggcta agctaagaga aaggctaaac cagaggcaaa aattgttcga 180
atcaggacaa gggtggtttg agggactgtt taacaggtcc ccatggttca cgaccctgat 240
atccaccatt atgggccctc tgatagtact tttattaatc ctactcctcg gaccctgcat 300
tctcaaccgc ttggtccagt ttgtaaaaga cagaatttcg gtggtgcagg ccctggttct 360
gacccaacag tatcaccaac tcaaatcaat agatccagaa gaagtagaat cgcgtgaata 420
aaagatttta ttcagtttcc agaaagaggg gggaatgaaa gaccccacca taaggcttag 480
caagctagct gcagtaacgc cattttgcaa ggcatgaaaa agtaccagag ctgagttct 539

<210> 157
<211> 90

<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 80, 81
<223> n = A,T,C or G

<400> 157
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 60
tttttttttt tttttgggcn ntaaaggggg 90

<210> 158
<211> 76
<212> DNA
<213> Homo sapiens

<400> 158
ggccgcgtcg actttttttt tttttttttt tttttttttt tttttttttt tttttttttt 60
tttttttttt tcccgg 76

<210> 159
<211> 559
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 414, 556
<223> n = A,T,C or G

<400> 159
ggccgcgtcg accgggctcg gaacgagact gcacggattg ttttaagaaa atggcagaca 60
aaccagacat gggggaaatc gccagcttcg ataaggccaa gctgaagaaa acggagacgc 120
aggagaagaa caccctgccg accagagagt gagtgtgcct cggtctcccg cgccccagcc 180
cagcccctca ccctgctctt ccttgcaaac ccactcctcc accccccacc ccgccgttgt 240
ccccggtgtg ggcggccccg gccactcttt cagtttcaca aagcgccttg tttctcccca 300
gccccaagct tccttctaaa tccccacacc tcgtgggtgc ctcgcccaca ccgggaagca 360
cctcggttgc gggtgggggt tgcagctccc cttcagcgcc cgcttcccgc tctncacagc 420
cattgagcag gagaagcgga gtgaaatttc ctaagatcct ggaggatttc ctaccccgt 480
cctcttcgag accccagtcg tgatgtggag gaagagccac ctgcaagatg gacacgagcc 540
acaagctgca ctgtgnacc 559

<210> 160
<211> 546
<212> DNA
<213> Homo sapiens

<400> 160
ggccgcgtcg acggcgttgt tctggattcc cgtcgtaact taaagggaaa ttttcacaat 60
gtccggagcc cttgatgtcc tgcaaatgaa ggaggaggat gtccttaagt tccttgcagc 120
aggaacccac ttaggtggca ccaatcttga cttccagatg gaacagtaca tctataaaag 180
gaaaagtgat ggcatctata tcataaatct caagaggacc tgggagaagc ttctgctggc 240
agctcgtgca attgttgcca ttgaaaaccc tgctgatgtc agtgttatat cctccaggaa 300
tactggccag agggctgtgc tgaagtttgc tgctgccact ggagccactc caattgctgg 360
ccgcttcact cctggaacct tcactaacca gatccaggca gccttccggg agccacggct 420
tcttgtggtt actgacccca gggctgacca ccagcctctc acggaggcat cttatgttaa 480
cctacctacc attgcgctgt gtaacacaga ttctcctctg cgctatgtgg acattgccat 540
cccatg 546

<210> 161
<211> 449

<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 38, 44, 88, 102, 112, 121, 126, 171, 207, 214, 220, 224,
237, 250, 253, 325, 328, 351, 367, 378, 397, 418
<223> n = A,T,C or G

<400> 161
ggccgcccтt ttttttttt ttttttttt tttttttnga ctgncctaaa ttgtttatta 60
agtatgaatt ttacaaactt tacttatntt agcggtaacg gnggagctgg anagtattgc 120
nccttntcca agctgcccgg cgagagccac caatagtgtg ggggaacttg nggccctttc 180
caaggccacg gctctttcgg cctgcanatg tcancccacn catntccctg tgcttgngga 240
ctggtttggn ganccactgg gtgtcaggat ttcttctgat agctttatgg aatggatcaa 300
tgaggataac ctcaaaaaat ttgtntgngg aatcttcacc aacccagtaa naattcagga 360
ctctcanagc cccacagngg cgtccagctc gctcctntgc aacggactga aggcttcnag 420
caaactttag ctggttaaca ccatgatgg 449

<210> 162
<211> 525
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 476
<223> n = A,T,C or G

<400> 162
ggccgccctt ttttttttt tttgtagtca gctatttaat taggttctta agacatttag 60
aacaccaatt tgtgaggata aattccattc gtcagagcaa acacagatcg caggtagccc 120
tggagctgag gaatagcttt gatttttggt aaaatttgtg agtccacagc tttctgatca 180
atcttgcgct gctccgtaat ctcatatttc tctttttctg tgtcgaagat ctcaccttcc 240
tggtgtctgg gcttccgcag cttcttcttc ttgaagtaag catcagtaag atgttttggg 300
atttttacat tgctgatatc gattttggtt gaagtggcaa tgacaaattt ctggtgtgtt 360
cttcgtagag gaactcgatt gaggaccaga ggtccagtca caagtaataa gccactagcc 420
agctgcttca ggaaaaccac cctcttgccc ctgtggcgtc cagtgaggat gatcanaatg 480
gtcccggggg taatgctggc tcgcagtttt ctcacgtgct gactg 525

<210> 163
<211> 553
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 550
<223> n = A,T,C or G

<400> 163
ggccgcgtcg acctggacac ggcatgatgt tcgtccgcaa cgattgcaag gtgttcagat 60
tttgcaaatc taaatgtcat aaaaacttta aaaagaagcg caatcctcgc aaagttaggt 120
ggaccaaagc attccggaaa gcagctggta aagagcttac agtggataat tcatttgaat 180
ttgaaaaacg tagaaatgaa cctatcaaat accagcgaga gctatggaat aaaactattg 240
atgcgatgaa gagagttgaa gaaatcaaac agaagcgcca agctaaattt ataatgaaca 300
gattgaagaa aaataaagag ctacagaaag ttcaggatat caaagaagtc aagcaaaaca 360
tccatcttat ccgagcccct cttgcaggca aagggaaaca gttggaagag aaaatggtac 420
agcagttaca agaggatgtg gacatggaag atgctcctta aaaatctctg taaccatttc 480
ttttatgtac atttgaaaat gccctttgga tacttggaac tgctaaatta ttttattttt 540
tacataaggn cac 553

<210> 164
<211> 484
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 247, 359, 396, 467
<223> n = A,T,C or G

<400> 164
ggccgccctt tttttttttt tttcggatgc aaacagcaaa aggctttatt gggaacacgg 60
gtacccgggc gactcagtct atcggatgac tggcgcaccg agtgtggggt ttttaccctt 120
tttatagggc tggggagcaa aaagcgcggt tacagaagcg agaagcgagc tgattggtta 180
gtttaaataa ggcttggggt ttttcccggt cttttgggga acttgaaact gaggtgggac 240
tttccanaaa ctgttgctag tttcgcttta tctgagtacc atctgttctt ggccctgagc 300
cggggcccag gtgctcgacc acagatatcc tgtttggccc ctgtcccagt tttgttcanc 360
cttattcttt aactaaactt ccttgtgact tttganaact cagctctggt actttttcat 420
gccttgcaaa atggcgttac tgcagctagc ttgctaagcc ttatggnggg gtctttcatt 480
cccc 484

<210> 165
<211> 530
<212> DNA
<213> Homo sapiens

<400> 165
ggccgcgtcg accggtgcca agcgcagcta gctcagcagg cggcagcggc ggcctgagct 60
tcagggcagc cagctccctc ccggtctcgc cttccctcgc ggtcagcatg aaagccttca 120
gtcccgtgag gtccgttagg aaaaacagcc tgtcggacca cagcctgggc atctcccgga 180
gcaaaacccc tgtggacgac ccgatgagcc tgctatacaa catgaacgac tgctactcca 240
agctcaagga gctggtgccc agcatccccc agaacaagaa ggtgagcaag atggaaatcc 300
tgcagcacgt catcgactac atcttggacc tgcagatcgc cctggactcg catcccacta 360
ttgtcagcct gcatcaccag agacccgggc agaaccaggc gtccaggacg ccgctgacca 420
ccctcaacac ggatatcagc atcctgtcct tgcaggcttc tgaattccct tctgagttaa 480
tgtcaaatga cagcaaagca ctgtgtggct gaataagcgg tgttcatgat 530

<210> 166
<211> 310
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 285, 300
<223> n = A,T,C or G

<400> 166
ggccgcgtcg accaaggtgc tcggtccttc cgaggaagct aaggctgcgt tggggtgagg 60
ccctcacttc atccggcgac tagcaccgcg tccggcagcg ccagccctac actcgcccgc 120
gccatggcct ctgtctccga gctcgcctgc atctactcgg ccctcattct gcacgacgat 180
gaggtgacag tcacggagga taagatcaat gccctcatta aagcagccgg tgtaaatgtt 240
gagccttttt ggcctggctt gtttgcaaag gccctggcca acgtnaacat tgggagcctn 300
atctgcaatg 310

<210> 167
<211> 581
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature

<222> 49, 68, 113, 166, 478, 500, 548, 570
<223> n = A,T,C or G

<400> 167
ggccgccctt tttttttttt tttgttttaa aatatgttta ttttgtatng ttttacaatg 60
aatacttnag caaagaaaat aattataatt tcaaaatgca atccctggat ttnataaata 120
tcctttataa tcgattacac taatcaatat ctagaaatat acatanacaa agttagctaa 180
tgaataaaat aagtaaaatg actacataaa ctcaatttca gggatgaggg atcatgcatg 240
atcagttaag tcactctgcc actttttaaa ataatacgat tcacatttgc ttcaatcaca 300
taaacattca ttgcaggagt tacacggcta atcattgaaa attatgatct ttgttagctt 360
aaaagaaaat tcagtttaat acaaagacat tcaagatgaa aatttcagga ccgttgatca 420
gaagctttca atgtgtgttg ctctacttta ttataggcaa gattcaagta aggctaanaa 480
agaagagtgt ttccattgan acatgatcta agaatagcct tctatagagg caaattatgt 540
tctgtagnaa ctagctagcc agccaccaan gatgttacca a 581

<210> 168
<211> 465
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 96, 190, 224, 447, 450
<223> n = A,T,C or G

<400> 168
ggccgccctt tttttttttt tttcttagga gagttttatt cattcattga tccagtattt 60
acaggggcta gaggggtcaa gctgtgctca gcccanaggc agctgccaca cttgccagca 120
ccccccactc agtcactatg tacagataaa ggggcctgct tggatcacct ttttcaaagc 180
catctggcan aggccatggg gctgtgttgg ggcctgggct ccanaggcac tgctgggccc 240
attacccctt ggcatcaggt cctctggaac acaggggctc caacgggttg tcttgatcct 300
gctgtccccc accctgagtg ccttgcagag gctgaggaaa ctggagtagc aggaagagct 360
gagtggtgcc agcttcctat aagcaaccct gtctctgcta cccctgagag ggagacatgg 420
taatactgag gggctggaca gaggctnttn tgagcctcaa gcgcc 465

<210> 169
<211> 232
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 162, 202, 222
<223> n = A,T,C or G

<400> 169
ggccgccctt tttttttttt tttttttttt tttctatttt ctaaattaac tataatttat 60
aaataatcta taaactatca tttccttaaa ataggggttt aaacacattt tccctaaaaa 120
tagagtgaaa ggacttgaga ccagagataa ccgaccattg anacccgtaa tatcctaaca 180
atatgaaagc tggttaataa tnggtaacta tttcctattt anaagtcgac gc 232

<210> 170
<211> 512
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 446, 461
<223> n = A,T,C or G

<400> 170

ggccgcgtcg acgccatctt gcgtccccgc gtgtgtgcgc ctaatctcag gtggtccacc 60
cgagacccct tgagcaccaa ccctagtccc ccgcgcggcc ccttattcgc tccgacaaga 120
tgaaagaaac aatcatgaac caggaaaaac tcgccaaact gcaggcacaa gtgcgcattg 180
gtgggaaagg aactgctcgc agaaagaaga aggtggttca tagaacagcc acagcagatg 240
acaaaaaact tcagttctcc ttaaagaagt taggggtaaa caatatctct ggtattgaag 300
aggtgaatat gtttacaaac caaggaacag tgatccactt taacaaccct aaagttcagg 360
catctctggc agcgaacact ttcaccatta caggccatgc tgagacaaag cagctgacag 420
aaatgctacc cagcatctta aaccancttg gtgcggatag nctgactagt ttaaggagac 480
tggccgaagc tctgcccaaa caatctgtgg at 512

<210> 171
<211> 56
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 49
<223> n = A,T,C or G

<400> 171
ggccgccctt tttttttttt tttttttttt tttttttttt ttttttttng caaaca 56

<210> 172
<211> 139
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 68
<223> n = A,T,C or G

<400> 172
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccanaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgaggggc 139

<210> 173
<211> 368
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 28, 47, 122, 252, 253, 254, 283, 314, 337
<223> n = A,T,C or G

<400> 173
gcgccatgtc cacccctccg ttggccgngt cggggatggc gcccggnccc ttcgccgggc 60
cccaggctca gcaggccgcc cgggaagtca acacggcgtc gctgtgccgc atcgggcagg 120
anacagtgca ggacatcgtg taccgcacca tggagatctt tcagctcctg aggaacatgc 180
agctgccaaa tggtgtcact taccacactg gaacatatca agaccggtta acaaagctac 240
aggataatct tnnncaactt tcagttctct tcaggaagct ganattggta tatgacaaat 300
gcaatgaaaa ctgnggtggg atggatccca ttccagncga gcaacttatt ccatatgtgg 360
aagaagat 368

<210> 174
<211> 554
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 536
<223> n = A,T,C or G

<400> 174
ggccgcgtcg acaggggctg gactcagggc ggtttgaaag atcggcgcgc accgcaggag 60
caacggttgg tcctgcggct gtgatgtcgg tgttgaggcc cctggacaag ctgcccggcc 120
tgaacacggc caccatcttg ctggtgggca cggaggatgc tcttctgcag cagctggcgg 180
actcgatgct caaagaggac tgcgcctccg agctgaaggt ccacttggca aagtccctcc 240
ctttgccctc cagtgtgaat cggccccgaa ttgacctgat cgtgtttgtg gttaatcttc 300
acagcaaata cagtctccag aacacagagg agtccctgcg ccatgtggat gccagcttct 360
tcttggggaa ggtgtgtttc ctcgccacag gtgctgggcg ggagagccac tgcagcattc 420
accggcacac cgtggtgaag ctggcccaca cctatcaaag ccccctgctc tactgtgacc 480
tggaggtgga aggctttagg gccaccatgg cgcaacgcct ggtgcgcgtg ctgcanatct 540
gtgctggcca cgtg 554

<210> 175
<211> 62
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 46, 47, 52
<223> n = A,T,C or G

<400> 175
ggccgccctt tttttttttt tttttttttt tttttttttt tttttnngga tncaaacagc 60
aa 62

<210> 176
<211> 507
<212> DNA
<213> Homo sapiens

<400> 176
ggccgcgtcg acgatctgtg aaaatggttc gctattcact tgacccggag aaccccacga 60
aatcatgcaa atcaagaggt tccaatcttc gtgttcactt taagaacact cgtgaaactg 120
ctcaggccat caagggtatg catatacgaa aagccacgaa gtatctgaaa gatgtcactt 180
tacagaaaca gtgtgtacca ttccgacgtt acaatggtgg agttggcagg tgtgcgcagg 240
ccaagcaatg ggctggaca caaggtcggt ggcccaaaaa gagtgctgaa tttttgctgc 300
acatgcttaa aaacgcagag agtaatgctg aacttaaggg tttagatgta gattctctgg 360
tcattgagca tatccaagtg aacaaagcac ctaagatgcg ccgccggacc tacagagctc 420
atggtcggat taacccatac atgagctctc cctgccacat tgagatgatc cttacggaaa 480
aggaacagat tgttcctaaa ccagaag 507

<210> 177
<211> 155
<212> DNA
<213> Homo sapiens

<400> 177
ccaacttgtt tattgcagct tataatggtt acaaataaag caatagcatc acaaatttca 60
caaataaagc attttttca ctgcattcta gttgtggttt gtccaaactc atcaatgtat 120
cttatcatgt ctgtataccg tcgacctcta gctag 155

<210> 178
<211> 301
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 248
<223> n = A,T,C or G

<400> 178
ggccgccctt ttttttttt ttttcggatg caaacagcaa aaggctttat tgggaacacg 60
ggtacccggg cgactcagtc tatcggatga ctggcgcacc gagtgtgggg tttttaccct 120
ttttataggg ctggggagca aaaagcgcgg ttacagaagc gagaagcgag ctgattggtt 180
agtttaaata aggcttgggg tttttcccgg tcttttgggg aacttgaaac tgaggtggga 240
ctttccanaa actgttgcta gtttcgcttt atctgtggtc gagcacctgg gccgtcgacg 300
c 301

<210> 179
<211> 476
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 144, 215, 273
<223> n = A,T,C or G

<400> 179
ggccgccctt ttttttttt tttggtatat aaactattta ttaacagaca aggcctacag 60
acttatttct tcttggacac acccacggtg cggccacggc ggccagtggt cttggtgtgc 120
tggcctcgga cacgaaggcc ccanaagtga cgcagccctc tatgggcccg aatcttcttc 180
agtcgctcca ggtcttcacg gagcttgttg tccanaccat tggctaggac ctggctgtat 240
tttccatcct ttacatcctt ctgtctgttc aanaaccagt ctgggatctt gtactggcgt 300
ggattctgca taatggtgat cacacgttcc acctcatcct cagtgagttc tcccgccctc 360
ttggtgaggt caatgtctgc tttcctcaac accacatgag catatcttcg gcccacaccc 420
ttaatggcag tgatggcaaa ggctattttc cgccgcccat cgatgttggt gttgag 476

<210> 180
<211> 521
<212> DNA
<213> Homo sapiens

<400> 180
ggccgcgtcg acgtttataa tgctacaaaa tgaacaggag ataagtcaac tgaaaaaaga 60
aattgaaaga acacaacaaa ggatgaaaga aatggagagt gttatgaaag agcaagaaca 120
gtacattgcc actcagtaca aggaggccat agatttgggg caagaattga ggctgacccg 180
ggagcaggtg cagaactctc atacagaatt ggcagaggct cgtcatcagc aagtccaagc 240
acagagagaa atagaaaggc tctctagtga actggaggat atgaagcaac tctctaaaga 300
gaaagatgct catggaaacc atttagctga agaactgggg gcttctaaag tacgtgaagc 360
tcatttagaa gcaagaatgc aagcagaaat caagaaattg tcagcagaag tagaatctct 420
caaagaagct tatcatatgg agatgatttc acatcaagag aaccatgcaa agtggaagat 480
ttctgctgac tctcaaaagt cttctgttca gcaactaaac g 521

<210> 181
<211> 139
<212> DNA
<213> Homo sapiens

<400> 181
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgagggggc 139

<210> 182
<211> 565
<212> DNA

<213> Homo sapiens

<400> 182
ggccgcgtcg acaagcgcca cccggaggct ctagcctgac aaatgcttgc tgacctgggc 60
cagagctctt cccttacgca agtctcagcc ggtcgtcgcg acgttcgccc gctcgctctg 120
aggctcctga agccgaaacc agctagactt tcctccttcc cgcctgcctg tagcggcgtt 180
gttgccactc cgccaccatg ttcgaggcgc gcctggtcca gggctccatc ctcaagaagg 240
tgttggaggc actcaaggac ctcatcaacg aggcctgctg ggatattagc tccagcggtg 300
taaacctgca gagcatggac tcgtcccacg tctctttggt gcagctcacc ctgcggtctg 360
agggcttcga cacctaccgc tgcgaccgca acctggccat gggcgtgaac ctcaccagta 420
tgtccaaaat actaaaatgc gccggcaatg aagatatcat tacactaagg gccgaagata 480
acgcggatac cttggcgcta gtatttgaag caccaaacca ggagaaagtt tcagactatg 540
aaatgaagtt gatggattta gatgt 565

<210> 183
<211> 139
<212> DNA
<213> Homo sapiens

<400> 183
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaaccattc 60
gtagacgacc tgcttctggg tcggggtttc gtacgtagca gagcagctcc ctcgctgcga 120
tctattgaaa ggtcgacgc 139

<210> 184
<211> 515
<212> DNA
<213> Homo sapiens

<400> 184
ggccgcgtcg accacaggtg tcgtgaaaac taccccctaaa agccaaaatg ggaaaggaaa 60
agactcatat caacattgtc gtcattggac acgtagattc gggcaagtcc accactactg 120
gccatctgat ctataaatgc ggtggcatcg acaaaagaac cattgaaaaa tttgagaagg 180
aggctgctga gatgggaaag ggctccttca agtatgcctg ggtcttggat aaactgaaag 240
ctgagcgtga acgtggtatc accattgata tctccttgtg gaaatttgag accagcaagt 300
actatgtgac tatcattgat gccccaggac acagagactt tatcaaaaac atgattacag 360
ggacatctca ggctgactgt gctgtcctga ttgttgctgc tggtgttggt gaatttgaag 420
ctggtatctc caagaatggg cagacccgag agcatgccct tctggcttac acactgggtg 480
tgaaacaact aattgtcggt gttaacaaaa tggat 515

<210> 185
<211> 220
<212> DNA
<213> Homo sapiens

<400> 185
ggccgcgtcg acggcggcct gcattgcagc ggggcactgg gctgcaatgg gcctaggccg 60
gagtttccaa gccgccagga ctctgctccc cccgccggcc tctatcgcct gcagggtcca 120
cgcggggcct gtccggcagc agagcactgg gccttccgag cccggtgcgt tccaaccgcc 180
gccgaaaccg gtcatcgtgg acaagcaccg ccccgtggaa 220

<210> 186
<211> 301
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 23, 40, 45, 47, 97, 102, 135, 170, 174, 196, 211, 237, 239,
242, 268, 284, 285, 294
<223> n = A,T,C or G

<400> 186
ggccgcccctt ttttttttt ttnttttttt tttttttttn ggcanancta gctgaggttt 60
tattttggac caaaaaaaaa aagcaattga attgttntgt anctggaggc atgggcaagg 120
ggggtcccca ggtantaaac tccccaggtg ggctgagggc tagggctgan cctnaggtgg 180
gtctcctgtt cccagngcta ccctgcatag nggcctcctt cccaggctct ggggcancnc 240
angaggggta ggctgggagg ggctgccnca ctgttcactt gggnnggacg tcanaggact 300
c 301

<210> 187
<211> 466
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 345, 376, 436, 459, 460
<223> n = A,T,C or G

<400> 187
ggccgccctt ttttttttt tttggtttgc cactggtgag tttattacac gactaaagtt 60
caaataaaaa aataaaaacc aaaatcttgg cagggaagct agagccagaa tcaggaaaat 120
ctgcttcctt gtccccagac tccctggcca agcccagctc cactaactca tcttgactcg 180
atcaagttcc tcatcaagac ttgcatctgt accctggaca tctctgctgc tcccactgga 240
gagtgagtct ggagtccctg gcactggggc tttggtgagg gctccatata cacccatggc 300
ctgagccacc atgctggtga catcgccagg gttggagggc agtangatag tgttggagtc 360
cttggccagt ttgganaacg cgctgacata ctgctcggcc acagtcagtg aagctgctgc 420
atctccatta tgttgngtca gagctgcagc caggattcnn atagct 466

<210> 188
<211> 356
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 31, 33, 40, 53, 60, 77, 147, 155, 201, 211, 223, 274, 280,
288, 298
<223> n = A,T,C or G

<400> 188
ggccgccctt ttttttttt ttttttttt nanggacggn ttttattgat gcncccacan 60
agccacccac aatttgnaag gcatgatgat gtcaatacag taatcatcac caaagcaaat 120
taaaatacaa agtttatctg caacggnttt gcagngacat gatgccttca taaattaagg 180
aaactggcca cccgtcacag nggctcactt nagggtcttc acnaaatctt ccccttctt 240
gatggagccc ttcagctcgg ggatggcatc cganatcatn ttctcctnaa aagagganac 300
tttgccgatg cccaggttct tctcgatgcc ctttttccca agcagcagcg gtgtgg 356

<210> 189
<211> 192
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 36, 49, 72, 106, 149, 156, 166, 177
<223> n = A,T,C or G

<400> 189
gataaggagt ggatgcccgt caccaagttg ggccgnttgg tcaaggacnt gaagatcaag 60
tccctggagg anatctatct cttctccctg cccattaagg aatcanagat cattgatttc 120
ttcctggggg cctctctcaa ggatgaggnt ttgaanatta tgccantgca gaaacanacc 180
cgtgccggcc ag 192

<210> 190
<211> 451
<212> DNA
<213> Homo sapiens

<400> 190
ggccgcgtcg acgcgagtgg gagcaccagg atctcgggct cggaacgaga ctgcacggat 60
tgttttaaga aaatggcaga caaaccagac atgggggaaa tcgccagctt cgataaggcc 120
aagctgaaga aaacggagac gcaggagaag aacaccctgc cgaccagaga ccattgagca 180
ggagaagcgg agtgaaattt cctaagatcc tggaggattt cctacccccg tcctcttcga 240
gaccccagtc gtgatgtgga ggaagagcca cctgcaagat ggacacgagc cacaagctgc 300
actgtgaacc tgggcactcc gcgccgatgc caccggcctg tgggtctctg aagggacccc 360
cccccaatcg gactgccaaa ttctccggtt tgccccggga tattatagaa aattatttgt 420
atgaataatg aaaataaaac acacctcgtg g 451

<210> 191
<211> 265
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 24, 45
<223> n = A,T,C or G

<400> 191
ttcattgttc tcaagacagc aacnatactc agcataatgg ttcanaacaa acaaaaactc 60
cttggagtaa atacaattga atgaaagagt ctgggacacg gtaatgtcaa gaactaagaa 120
cagctgctgt actgatgctg gttatttccc ccctacacac aactttttttt tcatggacaa 180
ggaaaaatgc tgtaggtagg ctgaggctgt taagtaaaat gtcttgctat tctttctctt 240
ctcttcttca gttatgttac agaag 265

<210> 192
<211> 181
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 98
<223> n = A,T,C or G

<400> 192
ggccgccctt tttttttttt ttttaatgaa tccacttcct ttattgcagt aacctctgta 60
caaagcagca actgcaatac tcaaggttaa aacattanaa aagcatttgt gtgacaggta 120
tattacagta ttatcaaaat attacatttt cagacttact tagcagataa tcatccacca 180
g 181

<210> 193
<211> 403
<212> DNA
<213> Homo sapiens

<400> 193
ggccgcgtcg accgggtttg ccgccagaac acaggtgtcg tgaaaactac ccctaaaagc 60
caaaatggga aaggaaaaga ctcatatcaa cattgtcgtc attggacacg tagattcggg 120
caagtccacc actactggcc atctgatcta taaatgcggt ggcatcgaca aaagaaccat 180
tgaaaaattt gagaaggagg ctgctgagat gggaaagggc tccttcaagt atgcctgggt 240
cttggataaa ctgaaagctg agcgtgaacg tggtatcacc attgatatct ccttgtggaa 300
atttgagacc agcaagtact atgtgactat cattgatgcc ccaggacaca gagactttat 360
caaaaacatg attacaggga catctcaggc tgactgtgct gtc 403

<210> 194
<211> 517
<212> DNA
<213> Homo sapiens

<400> 194
ggccgcgtcg acggctttgc tgccacctgg tgtcagcctc agtcactttc tctgaatgct 60
tctgagcctt gcctacatct ctgagcctta actacatgtc tgtgggtatc acactgagtg 120
tgagttgtgt ccacacgtgc tcaagcagaa ggacttttgt gtccatgctt gtgtctagaa 180
aacagactgg ggaaccttat gtgagcagca catcccacca gtgaaacagg gtattgctct 240
tcttcttttc ttgatcttcc tgtctgggca gacttcagag actttgtggc ctggaggcct 300
attaagcacg acacagtatc agtggaattg atccataaac ctccctgtcc acatcttgcc 360
caatggggaa tggatctttc accaaagagc tcaccagcat tttccacaga gatgcaaatt 420
ctgagccctt ggagttccca gtggattcaa ggaaggaagt gggaacaagg ttggatgcct 480
acttatgagc ttgaccatca cagctatcgg taatcag 517

<210> 195
<211> 495
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 70, 263, 326, 366, 418
<223> n = A,T,C or G

<400> 195
ggccgccctt tttttttttt tttgagcttt ggacaaattt attgaaacat acaggcggct 60
gttagcagan aaatcattcc atgattgatg tgttacattt ggccactacc ttgaatgtat 120
aatttaaaaa ttatattttt cacaactaag cctttggcca aaaaagtcat ttagcacatc 180
tttaaagatc aataagaaat ggattttgga cattaaaaag atcaagtcac tgaattaaac 240
agtagcaacc cccattaatc tanaatccca tagtgctgaa ggtagaggtg tctgtgcaaa 300
gctagtcatt tgttaacagc aatcanaaga gatgggggca ggcacacctg tcagaggtgg 360
cagcanagct ggcaggacag gacggctggg ctggtctggt caggtgagca tgtcccanag 420
acagcagcaa cagagagccg tccagcaggc tgtgaggcag gtggatggtc ctagctcatc 480
tcttctttgg tcttc 495

<210> 196
<211> 139
<212> DNA
<213> Homo sapiens

<400> 196
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaaccattc 60
gtagacgacc tgcttctggg tcggggtttc gtacgtagca gagcagctcc ctcgctgcga 120
tctattgaaa ggtcgacgc 139

<210> 197
<211> 483
<212> DNA
<213> Homo sapiens

<400> 197
ggccgcgtcg acccgtcctg cgcggttgtt ctctggagca gcgttctttt atctccgtcc 60
gccttctctc ctacctaagt gcgtgccgcc acccgatgga agattcgatg gacatggaca 120
tgagccccct gaggccccag aactatcttt tcggttgtga actaaaggcc gacaaagatt 180
atcactttaa ggtggataat gatgaaaatg agcaccagtt atctttaaga acggtcagtt 240
taggggctgg tgcaaaggat gagttgcaca ttgttgaagc agaggcaatg aattacgaag 300
gcagtccaat taaagtaaca ctggcaactt tgaaaatgtc tgtacagcca acggtttccc 360
ttgggggctt tgaaataaca ccaccagtgg tcttaaggtt gaagtgtggt tcagggccag 420
tgcatattag tggacagcac ttagtagctg tggaggaaga tgcagagtca gaagatgaag 480

agg 483

<210> 198
<211> 483
<212> DNA
<213> Homo sapiens

<400> 198
ggccgcgtcg acggcaagat ggcagaagta gagcagaaga agaagcggac cttccgcaag 60
ttcacctacc gcggcgtgga cctcgaccag ctgctggaca tgtcctacga gcagctgatg 120
cagctgtaca gtgcgcgcca gcggcggcgg ctgaaccggg gcctgcggcg gaagcagcac 180
tccctgctga agcgcctgcg caaggccaag aaggaggcgc cgcccatgga gaagccggaa 240
gtggtgaaga cgcacctgcg ggacatgatc atcctacccg agatggtggg cagcatggtg 300
ggcgtctaca acggcaagac cttcaaccag gtggagatca agcccgagat gatcggccac 360
tacctgggcg agttctccat cacctacaag cccgtaaagc atggccggcc cggcatcggg 420
gccacccact cctcccgctt catccctctc aagtaatggc tcagctaata aaggcgcaca 480
tga 483

<210> 199
<211> 566
<212> DNA
<213> Homo sapiens

<400> 199
ggccgcgtcg actttttttt taagttttta aacttttttat ttgcatatta aaaaaattgt 60
gcattccaat aattaaaatc atttgaacaa aaaaaaaatg gcactctgat taaactgcat 120
tacagcctgc aggacacctt gggccagctt ggttttactc tagatttcac tgtcgtccca 180
ccccacttct tccaccccac ttcttccttc accaacatgc aagttctttc cttccctgcc 240
agccagatag atagacagat gggaaaggca ggcgcggcct tcgttgtcag tagttctttg 300
atgtgaaagg ggcagcacag tcatttaaac ttgatccaac ctctttgcat cttacaaagt 360
taaacagcta aaagaagtaa aataagaagg caatgcttgt ggaatgtaca gtgcatattg 420
gcggcgcacg cctcattacg attcgcctgc ttgcttctcc tgttcaatcg tttctttgga 480
aggcagtgga tttttctctt gcgtctctgt cttcttcagt ttcgacttat cgaatttctc 540
gatctcagcc atatcgggtt tgtcag 566

<210> 200
<211> 483
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 453
<223> n = A,T,C or G

<400> 200
ggccgcgtcg acggagctgc cctcgcgaca tgggtcaccc gccgctgctg ccgctgctgc 60
tgctgctcca cacctgcgtc ccagcctctt ggggcctgcg gtgcatgcag tgtaagacca 120
acggggattg ccgtgtggaa gagtgcgccc tgggacagga cctctgcagg accacgatcg 180
tgcgcttgtg ggaagaagga gaagagctgg agctggtgga gaaaagctgt acccactcag 240
agaagaccaa caggaccctg agctatcgga ctggcttgaa gatcaccagc cttaccgagg 300
ttgtgtgtgg gttagacttg tgcaaccagg gcaactctgg ccgggctgtc acctattccc 360
gaagccgtta cctcgaatgc atttcctgtg gctcatcaga catgagctgt gagaggggcc 420
ggcaccagag cctgcagtgc cgcagccctg aanaacagtg cctggatgtg gtgacccact 480
gga 483

<210> 201
<211> 522
<212> DNA
<213> Homo sapiens

<220>

<221> misc_feature
<222> 66, 127, 217, 279, 519
<223> n = A,T,C or G

<400> 201
ggccgccctt tttttttttt tttttttcac actacaatag ttaattttat ttgttcaaga 60
gctcanattg caagcattaa accaagcata ggctttgatt ctgtgagccc aaattcacat 120
attgaanaag atcaaagcaa actgtgatcc atgtacatgg atgaaaacta aaggctcgag 180
ttaatcacat tgtagttttt aaatttctac agcctanagc tcactagtca caggtctttt 240
aggtccttct ggatgtccca cagggtatct gcacttttnt tgagctgagc aacctcatca 300
tcctttagct tctggttgat aacgctggtt aatccccggg cattgaggat acatggaagg 360
ctcaggaaga cttcattctc aatgccatac atccccttta ccattgttga cacgggatga 420
atcctggata gatttttcaa catggattca ataagatcag ccacacttaa tccaatagcc 480
cagttggtat atcctttttag cttgatgact tcataggcnc tt 522

<210> 202
<211> 466
<212> DNA
<213> Homo sapiens

<400> 202
ggccgcgtcg acccatggcg ctgcagctct cccgggagca gggaatcacc ctgcgcggga 60
gcgccgaaat cgtggccgag ttcttctcat tcggcatcaa cagcatttta tatcagcgtg 120
gcatatatcc atctgaaacc tttactcgag tgcagaaata cggactcacc ttgcttgtaa 180
ctactgatct tgagctcata aaatacctaa ataatgtggt ggaacaactg aaagattggt 240
tatacaagtg ttcagttcag aaactggttg tagttatctc aaatattgaa agtggtgagg 300
tcctggaaag atggcagttt gatattgagt gtgacaagac tgcaaaagat gacagtgcac 360
ccagagaaaa gtctcagaaa gctatccagg atgaaatccg ttcagtgatc agacagatca 420
cagctacggt gacatttctg ccactgttgg aagtttcttg ttcatt 466

<210> 203
<211> 500
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 278
<223> n = A,T,C or G

<400> 203
ggccgccctt tttttttttt tttattgttg ttgctgttta tttttaaaat cacacattga 60
atacacacaa caatcagatt tcttcaccaa acccccaatt ttttagcaac tggctctatt 120
cagcaccaaa aactccagtc tgtgggaagt gcacagacac agacttcact tctgtgtctt 180
ggtcgagcaa tccatcaggt cattggttag gttcaggact tgccctcttt tccttccctc 240
ttcatggctc tccagaccca aggttctcaa ggcttcanat ttatggccca cagcccctat 300
taccacctaa atccagcagc catttgggaa gaattcaaaa taatttgaga tgaatgaaat 360
gacaggacct gtattacaga tgggtattct ccattccaag taaactgttt cttaatgagt 420
tctgagactc tggtcttgga tgccatgatc atactgggta attatttcta gtctgagact 480
ttgtgacttt gtcagatgcc 500

<210> 204
<211> 409
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 358
<223> n = A,T,C or G

<400> 204

ggccgcgtcg accctgtaca cgtatcctga aaactggagg gccttcaagg ctctcatcgc 60
tgctcagtac agcggggctc aggtccgcgt gctctccgca ccaccccact tccattttgg 120
ccaaaccaac cgcacccctg aatttctccg caaatttcct gccggcaagg tcccagcatt 180
tgagggtgat gatggattct gtgtgtttga gagcaacgcc attgcctact atgtgagcaa 240
tgaggagctg cggggaagta ctccagaggc agcagcccag gtggtgcagt gggtgagctt 300
tgctgattcc gatatagtgc ccccagccag tacctgggtg ttccccacct tggcatnat 360
gcaccacaac aaacaggcca ctgagatgca aaggaggaag tgaggcgaa 409

<210> 205
<211> 554
<212> DNA
<213> Homo sapiens

<400> 205
ggccgcggtc ggtggttagt ttctgcgact tgtgttggga ctgctgatag gaagatgtct 60
tcaggaaatg ctaaaattgg gcaccctgcc cccaacttca aagccacagc tgttatgcca 120
gatggtcagt ttaaagatat cagcctgtct gactacaaag gaaaatatgt tgtgttcttc 180
ttttaccctc ttgacttcac ctttgtgtgc cccacggaga tcattgcttt cagtgatagg 240
gcagaagaat ttaagaaact caactgccaa gtgattggtg cttctgtgga ttctcacttc 300
tgtcatctag catgggtcaa tacacctaag aaacaaggag gactgggacc catgaacatt 360
cctttggtat cagacccgaa gcgcaccatt gctcaggatt atggggtctt aaaggctgat 420
gaaggcatct cgttcagggg ccttttttatc attgatgata agggtattct tcggcagatc 480
actgtaaatg acctccctgt tggccgctct gtggatgaga ctttgagact agttcaggcc 540
ttccagttca ctga 554

<210> 206
<211> 79
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 66, 67, 75
<223> n = A,T,C or G

<400> 206
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttgg 60
gcatannaaa atttnttac 79

<210> 207
<211> 395
<212> DNA
<213> Homo sapiens

<400> 207
ggccgcgtcg accgagtggg agcaccagga tctcgggctc ggaacgagac tgcacggatt 60
gttttaagaa aatggcagac aaaccagaca tgggggaaat cgccagcttc gataaggcca 120
agctgaagaa aacggagacg caggagaaga acaccctgcc gaccaaagag accattgagc 180
aggagaagcg gagtgaaatt tcctaagatc ctggaggatt tcctaccccc gtcctcttcg 240
agaccccagt cgtgatgtgg aggaagagcc acctgcaaga tggacacgag ccacaagctg 300
cactgtgaac ctgggcactc cgcgccgatg ccaccggcct gtgggtctct gaagggaccc 360
ccccccaatc ggactgccaa attctccggt ttgcc 395

<210> 208
<211> 239
<212> DNA
<213> Homo sapiens

<400> 208
ggccgccctt tttttttttt tttttgatgt ttgaaattca agtaacttta tttaaattca 60
aaaacaattc ttaaaactgc atttagagtc aagacccttt tgtattataa aaatcacaag 120
tatttctaag agacaaaaat acttctaggt taactagacc agatctgact ttggacttta 180

ttctttaaac aaattgcaga gaatagagaa aaaaataggt tatttacaga aacaatatc 239

<210> 209
<211> 589
<212> DNA
<213> Homo sapiens

<400> 209
ggccgcgtcg accgcgtgcg acggtcacct cggtttgggg aagatggaag agttgagtca 60
ggccctggct agtagctttt ctgtgtctca agatctgaac agcacagctg ccccacaccc 120
ccgcctatcc cagtacaagt ccaagtacag ttccttggag cagagtgagc gccgccggag 180
gttactggaa ctgcagaaat ccaagcggct ggattatgtg aaccatgcca gaagactggc 240
tgaagatgac tggacaggga tggagagtga ggaagaaaat aagaaagatg atgaagaaat 300
ggacattgac actgtcaaga agttaccaaa acactatgct aatcaattga tgctttctga 360
gtggttaatt gacgttcctt cagatttggg gcaggaatgg attgtggtcg tgtgccctgt 420
tggaaaaaga gcccttatcg tggcctccag gggttctacc agtgcctaca ccaagagtgg 480
ctactgtgtc aacaggtttt cttcacttct gccaggaggc aacaggcgaa actcaacagc 540
aaaaagacta caccattcta gattgcattt acaatgaggt aaaccagac 589

<210> 210
<211> 139
<212> DNA
<213> Homo sapiens

<400> 210
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaaccattc 60
gtagacgacc tgcttctggg tcggggtttc gtacgtagca gagcagctcc ctcgctgcga 120
tctattgaaa ggtcgacgc 139

<210> 211
<211> 468
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 33, 87, 281, 360
<223> n = A,T,C or G

<400> 211
ggccgccctt tttttttttt ttttttttg ttngaaattc aagtaacttt atttaaattc 60
aaaaacaatt cttaaaactg catttanagt caagaccctt ttgtattata aaaatcacaa 120
gtatttctaa gagacaaaaa tacttctagg ttaactagac cagatctgac tttggacttt 180
attctttaaa caaattgcag agaatagaga aaaaaatagg ttatttacag aaaacaatat 240
ctacatatgt acttagaggt acaaatttgg tgacagaaaa nacttcagta tatgctggca 300
tcttaaaagc agttctcaaa gagcttagtt ttattttctt gaattttaag aatgcctaan 360
atccttcttc atcctcgatc ttgggagcca agtagtattt taagtgtccc atatccgcaa 420
ttttatactc tacaacaagg ggtacatctg cagacatact gagtgtca 468

<210> 212
<211> 130
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 53
<223> n = A,T,C or G

<400> 212
ggccgccctt tttttttttt tttgtgattc ttttgtttta aataaatact tanaacacga 60
cttggctcct acaagcatct ggactctagg tctcagtact ggagtgtctc acccatgggc 120

cccacgcagg 130

<210> 213
<211> 501
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 43, 49, 111, 149, 251, 253, 382, 406, 430, 441, 451, 499
<223> n = A,T,C or G

<400> 213
ggccgccctt tttttttttt tttttttttt ttttgcaacg cangggctnt ttattgtcag 60
cgagagcagc aggccaaacg ggcactgagg ctccacgggg cccaggccct nttccgtgga 120
agagaggcaa gaggggtttc aggattcana ggggtcctcc gctcacgcag caccatgcaa 180
atatagagct aaaaactttc tgaatgtctc tggcttgaaa ccaactgggc caacaggttc 240
cacaaccact ntntttttga tcactgggag acaccaaaaa tgctgataga ggagctggtc 300
tgagtccacc caggccaaat tcttgacacc ctcgttagag tccaggtctg tggtattcag 360
ttgaaacact aggaaatgga anacacgtcc atccgtgccc acgctntgca ccaccacggg 420
ctgctccaan accttggcat nattcccata naggagccgg gcctgagcca gggcactgcc 480
aaaagcaaac aggatcatnt t 501

<210> 214
<211> 607
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 246, 345, 477, 511, 560
<223> n = A,T,C or G

<400> 214
ggccgccctt tttttttttt tttttttttt ttagcatctg gtgaatttat tcagcataac 60
cacaggcatt atcttcatgc tgtcacacac agacacaaac acagatacag cacaatatcc 120
atatttagcc caagtgcatt ccttctgagg ctcatttata tgtcttcata tgccacagcc 180
catcatttaa ataatggata ttttcaatgc caattccttt gttgactttc tcaatgtctt 240
ctgcanacat cttcatgact ccaacacata gagcatgctg ttttccttct gccatgatag 300
caacaatggt atctactgca gcagggtaaa gcttagctcc agganaagtt aagcctggac 360
acatgatatt tgctccactg agtacaaatt tgatggctcc tttatcaacc tgctggtgtg 420
gcaggataaa aggatatttg tgaagtaatc ttagggttgg ataaaaaggc ccttctnttt 480
gtctaaaaaa gagtaattct ccatttactg naaggatttc tatatgttca tggcatcgga 540
ctattttgac aggatctttn ttaggcatga tttgattaag ccatggttca atacctggaa 600
attgctc 607

<210> 215
<211> 499
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 48, 65, 105, 171, 249, 313, 325, 352, 375, 389, 392, 400,
413, 463, 485
<223> n = A,T,C or G

<400> 215
ggccgccctt tttttttttt tttttttttt tttttttggg agccaaanat ttatttcttc 60
atttnttgca tttgaaatac tcttcaatga catccttggc ctganactcc ttgccatagt 120
ccttaactac tacacaactg caaccaacca ctttacgggg tttcccctct ntgtcaattt 180
tacaaaggcc tacccattct cctagtttct tgttgtcatc aaccttaatt aggttgattt 240

ggtgttcanc acaaagggcc tccaccaact tgacatacat aggctcatca cagttggatg 300
caagcacaca aanatgggct tggcncttgt ctaaggcttt ggcagcttcg cnaattccac 360
gtgctaggcc atcgnggatg agggcagtnt tnaaaacctn ttgtaaagca gtnttaacgt 420
ccattacacc tccagcagca atgccttcct tggccatggc ggngggttac gggtgaagtt 480
gaatnttgaa cgcacccaa 499

<210> 216
<211> 537
<212> DNA
<213> Homo sapiens

<400> 216
ggccgcgtcg acctttcctt tccgtctggc ggcagccatc aggtaagcca agatgggtgc 60
atacaagtac atccaggagc tatggagaaa gaagcagtct gatgtcatgc gctttcttct 120
gagggtccgc tgctggcagt accgccagct ctctgctctc cacagggctc cccgccccac 180
ccggcctgat aaagcgcgcc gactgggcta caaggccaag caaggttacg ttatatatag 240
gattcgtgtt cgccgtggtg gccgaaaacg cccagttcct aagggtgcaa cttacggcaa 300
gcctgtccat catggtgtta accagctaaa gtttgctcga agccttcagt ccgttgcaga 360
ggagcgagct ggacgccact gtggggctct gagagtcctg aattcttact gggttggtga 420
agattccaca tacaaatttt ttgaggttat cctcattgat ccattccata aagctatcag 480
aagaaatcct gacacccagt ggatcaccaa accagtccac aagcacaggg agatgcg 537

<210> 217
<211> 90
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 79, 83, 87
<223> n = A,T,C or G

<400> 217
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt tttgggccca 60
aaaaaaaaat ttattttcnt ttnaaanaaa 90

<210> 218
<211> 299
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 220
<223> n = A,T,C or G

<400> 218
ggccgcgtcg actgcttttc tgaggatggt cagagaatag cttcttgtgg agctgataaa 60
accttacagg tgttcaaagc tgaaacagga gagaaacttc tagaaatcaa ggctcatgag 120
gatgaagtgc tttgttgtgc attctctaca gatgacagat ttatagcaac ctgctcagtg 180
gataaaaaag tgaagatttg gaattctatg actggggaan tagtacacac ctatgatgag 240
cactcagagc aagtcaattg ctgccatttc accaacagta gtcatcatct tctcttagc 299

<210> 219
<211> 456
<212> DNA
<213> Homo sapiens

<400> 219
ggccgcgtcg acgcaacgcg agtgggagca ccaggatctc gggctcggaa cgagactgca 60
cggattgttt taagaaaatg gcagacaaac cagacatggg ggaaatcgcc agcttcgata 120
aggccaagct gaagaaaacg gagacgcagg agaagaacac cctgccgacc aaagagacca 180

ttgagcagga gaagcggagt gaaatttcct aagatcctgg aggatttcct acccccgtcc 240
tcttcgagac cccagtcgtg atgtggagga agagccacct gcaagatgga cacgagccac 300
aagctgcact gtgaacctgg gcactccgcg ccgatgccac cggcctgtgg gtctctgaag 360
ggaccccccc ccaatcggac tgccaaattc tccggtttgc cccgggatat tatagaaaat 420
tatttgtatg aataatgaaa ataaaacaca cctcgt 456

<210> 220
<211> 82
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 67, 68, 78
<223> n = A,T,C or G

<400> 220
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 60
tttttnntt ccccccanaa aa 82

<210> 221
<211> 72
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 64, 65
<223> n = A,T,C or G

<400> 221
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt ttttttttg 60
gggnnccaaa tt 72

<210> 222
<211> 572
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 468, 502, 531
<223> n = A,T,C or G

<400> 222
ggccgcgtcg acccagagta cagtatcagc tgagctgacc ttactctgag gactaactct 60
tttgctggaa gcggtttctg atttacagct cttggtttct cccagacatg ttggtgggag 120
agattttggt ttttaagggg ttgttagatg gagtaaattt tcttttttttt tttttaact 180
aaaaaggggt cacagaattt cagcagttct ctgattttta tattttattc ctcttcctat 240
ccaatccctg ccttttgagt ccaggtggta agtacatttt ctttaacgtt tttcctgctt 300
ttcttcccaa atgtgtcttt ttctttgggc tactgtaccc tgcttccagt gctgtccccg 360
gcataggtcc atctctgcag aagccatttc aggagtacct ggaggctcaa cggcagaagc 420
ttcaccacaa aagcgaaatg ggcacaccac agggagaaaa ctggttgncc tggatgtttg 480
aaaagttggt cgttgtcatg gngtgttact tcatcctatc tatcattaac ntccatggca 540
caaagttatg ccaaacgaat ccagcagcgg tt 572

<210> 223
<211> 547
<212> DNA
<213> Homo sapiens

<400> 223

ggccgcgtcg acttgaaatt caagtaactt tatttaaatt caaaaacaat tcttaaaact 60
gcatttagag tcaagaccct tttgtattat aaaaatcaca agtatttcta agagacaaaa 120
atacttctag gttaactaga ccagatctga ctttggactt tattctttaa acaaattgca 180
gagaatagag aaaaaaatag gttatttaca gaaaacaata tctacatatg tacttagagg 240
tacaaatttg gtgacagaaa agacttcagt atatgctggc atcttagaag cagttctcaa 300
agagcttagt tttattttct tgaattttaa gaatgcctaa gatccttctt catcctcgat 360
cttgggagcc aagtagtatt ttaagtgtcc catatccgca attttatact ctacaacaag 420
gggtacatct gcagacatac tgagtgtcac cgttgaagag agtggagtgg cttttgtaaa 480
gaagttcagg tacctcagtg caaaagttag ttgaactggt tcattcatct ctatggtaac 540
agcttcc 547

<210> 224
<211> 353
<212> DNA
<213> Homo sapiens

<400> 224
ggccgcgtcg acgcccacta ggattgtttt aagaaaatgg cagacaaacc agacatgggg 60
gaaatcgcca gcttcgataa ggccaagctg aagaaaacgg agacgcagga gaagaacacc 120
ctgccgacca aagagaccat tgagcaggag aagcggagtg aaatttccta agatcctgga 180
ggatttccta cccccgtcct cttcgagacc ccagtcgtga tgtggaggaa gagccacctg 240
caagatggac acgagccaca agctgcactg tgaacctggg cactccgcgc cgatgccacc 300
ggcctgtggg tctctgaagg gacccccccc caatcggact gccaaattct ccg 353

<210> 225
<211> 512
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 46, 103, 275, 308, 337, 402, 472
<223> n = A,T,C or G

<400> 225
ggccgccctt tttttttttt tttcgttttg ctttatttta ttctgngaaa ataagcctta 60
ttataaatca caatgaaatc cacaaaccaa accccaaact ctntagcaaa acaagacccc 120
cttgatgtat aaagtcatcg ctgacaggac agtctttttc agttattgct tttgtcgctt 180
gtttcttgag aacatgactc caataaggct catggctgcc aagcccattc ctgcaacgct 240
tgcagcgatg atgacatctc tgacctggtc actgngggcg actccatagc gcagctcatt 300
cacaaagngc tcgcagttct cactggtcag cttgtanagc acctcctgcc ccaccagctc 360
ctccgcccgc tggatgattt tgctgcaggg cagcggcgag tncttgtcat catgtttgtt 420
gttgacctgg tacttgtcac tcccggccac atcatacagc aattccttct tnacgatggc 480
cttgtcagtc agggcggaca tgacactggc tg 512

<210> 226
<211> 507
<212> DNA
<213> Homo sapiens

<400> 226
ggccgcgtcg acatcaccat ggcggctggg accctgtaca cgtatcctga aaactggagg 60
gccttcaagg ctctcatcgc tgctcagtac agcggggctc aggtccgcgt gctctccgca 120
ccaccccact tccattttgg ccaaaccaac cgcacccctg aatttctccg caaatttcct 180
gccggcaagg tcccagcatt tgagggtgat gatggattct gtgtgtttga gagcaacgcc 240
attgcctact atgtgagcaa tgaggagctg cggggaagta ctccagaggc agcagcccag 300
gtggtgcagt gggtgagctt tgctgattcc gatatagtgc ccccagccag tacctgggtg 360
ttccccacct tgggcatcat gcaccacaac aaacaggcca ctgagaatgc aaaggaggaa 420
gtgaggcgaa ttctggggct gctggatgct tacttgaaga cgaggacttt tctggtgggc 480
gaacgagtga cattggctga catcaca 507

<210> 227

<211> 579
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 176, 223, 235, 404, 530
<223> n = A,T,C or G

<400> 227
ggccgccctt tttttttttt tttttttttg ggatatgacc tttattgaac ttatccacca 60
gagtggaaat aatgtctgta caaaaccaaa tgtttgttac tataacttct gcatcacaat 120
taaaatccaa acagtttttt aaaaacagtc aactcaatca aaacccacta cttcanaatc 180
aatagcttct ttgaagccac agtaacactt aaatatggtt aanactcgaa tgcanaaatt 240
tggttggttg gaaagctaat taaacttcca acttgctcaa atagaattac aaaaaggcaa 300
aattgtgttt ttcacagaga tacagtccac tggaatcacc aacactggac agctgttaga 360
gtatttagag tcctgagata acaaggaatc caggcatcct ttanacagtc ttctgttgtc 420
ctttcttccc aatcagagat ttgtggatgt gtggaatgac accaccacca gcaattgtag 480
ccttgatgag agaatccaat tcttcatctc cacgaatagc aagttgcaan gtgacgaggg 540
gtaatacgct ttacctttaa gtcttttgat gcatttcct 579

<210> 228
<211> 532
<212> DNA
<213> Homo sapiens

<400> 228
ggccgcgtcg acgcccggtg ccaagcgcag ctagctcagc aggcggcagc ggcggcctga 60
gcttcagggc agccagctcc ctcccggtct cgccttccct cgcggtcagc atgaaagcct 120
tcagtcccgt gaggtccgtt aggaaaaaca gcctgtcgga ccacagcctg ggcatctccc 180
ggagcaaaac ccctgtggac gacccgatga gcctgctata caacatgaac gactgctact 240
ccaagctcaa ggagctggtg cccagcatcc cccagaacaa gaaggtgagc aagatggaaa 300
tcctgcagca cgtcatcgac tacatcttgg acctgcagat cgccctggac tcgcatccca 360
ctattgtcag cctgcatcac cagagacccg ggcagaacca ggcgtccagg acgccgctga 420
ccaccctcaa cacggatatc agcatcctgt ccttgcaggc ttctgaattc ccttctgagt 480
taatgtcaaa tgacagcaaa gcactgtgtg gctgaataag cggtgttcat ga 532

<210> 229
<211> 305
<212> DNA
<213> Homo sapiens

<400> 229
ggccgcgtcg accgcagctc gctgcctcct ctatccctgc ctccctctcc cccctctgtt 60
tttctccctt ccttccctct ccgaccctct tcctctccct cccgatcctt tccctcctcc 120
tctcatcttt cccctgtctc tccgttctag ctcgtccccc accccacctt ttcttctttc 180
tcctcctctc cttcctctcc ccctctcctc tgtctccttc caccgtctcc cctgcctccc 240
tgtctttcag tccctgtttt tcagccccgt ctccctctcg gtttctctcc cccacctccc 300
tccgg 305

<210> 230
<211> 456
<212> DNA
<213> Homo sapiens

<400> 230
ggccgcgtcg acggaaccgt tccgggaact gaagttgcgg attaagcctg atcaagatga 60
caacctccca aaagcaccga gacttcgtgg cagagcccat gggggagaag ccagtgggga 120
gcctggctgg gattggtgaa gtcctgggca agaagctgga ggaaaggggt tttgacaagg 180
cctatgttgt ccttggccag tttctggtgc taaagaaaga tgaagacctc ttccgggaat 240
ggctgaaaga cacttgtggc gccaacgcca agcagtcccg ggactgcttc ggatgccttc 300
gagagtggtg cgacgccttc ttgtgatgct ctctgggaag ctctcaatcc ccagccctca 360

tccagagttt gcagccgagt agggactcct cccctgtcct ctacgaagga aaagattgct 420
attgtcgtac tcacctccga cgtactccgg ggtctt 456

<210> 231
<211> 529
<212> DNA
<213> Homo sapiens

<400> 231
ggccgcgtcg acgggataaa tacagtgcat gtctgcttca attagcagat gccgcaactc 60
cacacagtgt gtaaaatata tacaaccaaa aatcagcttt tgcaggtctt tatttcttct 120
gtaaaacagt aggtaacttt tcctaggttt cactcttttt agtgtactag atccagaaac 180
ttagtgtaat gccctgcttt atatttcttt gacttaacat tggtttcaga aagaatctta 240
gctacctaga atttacagtc tctgtttcat ggcaacactg gataatggct ttgtgaaatt 300
taaaaaattt ttgtagcgac tgtaaacaga aatgccaaat tgatggttaa ttgttgctgc 360
ttcaaaaata agtataaaat taatatgtaa ggaagcccat tctttcatgt taaatacttg 420
gggtggaggg ggagaaaggg aacctttttct taaaatgaaa ataattactg ctattttaaa 480
atttcttgat cattgaatgt gagacccttc taacatgatt tgagaagct 529

<210> 232
<211> 594
<212> DNA
<213> Homo sapiens

<400> 232
ggccgcgtcg actttgatgg cgtgatgtct cacagaaagt tctccgctcc cagacatggg 60
tccctcggct tcctgcctcg gaagcgcagc agcaggcatc gtgggaaggt gaagagcttc 120
cctaaggatg acccgtccaa gccggtccac ctcacagcct tcctgggata caaggctggc 180
atgactcaca tcgtgcggga agtcgacagg ccgggatcca aggtgaacaa gaaggaggtg 240
gtggaggctg tgaccattgt agagacacca cccatggtgg ttgtggcat tgtgggctac 300
gtggaaaccc ctcgaggcct ccggaccttc aagactgtct ttgctgagca catcagtgat 360
gaatgcaaga ggcgtttcta taagaattgg cataaatcta agaagaaggc ctttaccaag 420
tactgcaaga aatggcagga tgaggatggc aagaagcagc tggagaagga cttcagcagc 480
atgaagaagt actgccaagt catccgtgtc attgcccaca cccagatgcg cctgcttcct 540
ctgcgccaga agaaggccca cctgatggag atccaggtga acggaggcac tgtg 594

<210> 233
<211> 497
<212> DNA
<213> Homo sapiens

<400> 233
ggccgcgcta tgggacgcgg ctgccggcat ggagctgaga gacgcgggtt cacaggagag 60
ctcgccaagc aacgggcacg ggaagctggc gggccccagc ccatacctcg ggaggttcaa 120
ggtgggaagt cacgacctga cccttgttaa ccttcacctg gcagccctga ccctcctggg 180
gagcgagaat cccagcaaga atcacagtga tggccaccgg ttggcgagct ttgcacagac 240
cctacaggaa accctgaaag gagaaaagga tgtcattatc ttaggggatt ttggccaagg 300
gccagacagc aatgactatg atatcctgag gaaagaaaag ttccaccacc tgatccccgc 360
gcacaccttc accaacatca gcaccaagaa ccctcaaggc tcgaagtctc tggacaacat 420
ctggatcagt aaaagcttaa agaaggtttt cacaggtcac tgggctgtgg tgagagaagg 480
cctcacgaac ccttgga 497

<210> 234
<211> 570
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 270, 497, 558
<223> n = A,T,C or G

<400> 234
ggccgcccctt ttttttttt ttttaggatc tgtaaactac atttattgaa tacttactgg 60
acacatcata tacaaaaaag gatgggggca ggtaagaact tgaagaaatt aaatatacac 120
attaagtttc ttcactaatt ctagccacta aagaagtaca aaatttgtac aagtaatact 180
ttataatgaa attttgatgc ctgtcaaaag ggtaataagc tatacatata ctacaataaa 240
catttttaaa aactgtgctt aatatcatan aattttctta aaatgggttg gtaaaatacc 300
tatatagcat ccattcttac acacatattt tccattaaag attgcttaaa tagtacaaat 360
tcctattgct aagaaattca tggtcaacag ctgtatatga agttcctcta agaaacatca 420
cagcatttgc agtaagtcca tttctccagt gaagcccacc ttattttcag tttagcttac 480
taccaagttc tcatganaac tgtttatatg tcttttgctt ggtcatcttc ttcaagtttt 540
ctgatttcat tttttaanaa tttatagttt 570

<210> 235
<211> 454
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 238, 286, 319, 345, 409, 424, 425
<223> n = A,T,C or G

<400> 235
ggccgcgtcg acgcgcggag gcggaggctt gggtgcgttc aagattcaac ttcacccgta 60
acccaccgcc atggccgagg aaggcattgc tgctggaggt gtaatggacg ttaatactgc 120
cttacaagag gttctgaaga ctgccctcat ccacgatggc ctagcacgtg gaattcgcga 180
agctgccaaa gccttagaca agcgccaagc ccatctttgt gtgcttgcat ccaactgnga 240
tgagcctatg tatgtcaagt tggtggaggc cctttgtgct gaacancaaa tcaacctaat 300
taaggttgat gacaacaana aactaggaga atgggtaggc ctttntaaaa ttgacagaga 360
ggggaaaccc cgtaaagtgg ttggttgcag ttgtgtagta gttaaggant atggcaagga 420
gtcnnaggcc aaggatgtca ttgaagagta tttc 454

<210> 236
<211> 537
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 232, 401
<223> n = A,T,C or G

<400> 236
ggccgcccctt ttttttttt ttgtttggga tatgaccttt attgaactta tccaccagag 60
tggaaataat gtctgtacaa aaccaaatgt ttgttactat aacttctgca tcacaattaa 120
aatccaaaca gtttttttaaa aacagtcaac tcaatcaaaa cccactactt cagaatcaat 180
agcttctttg aagccacagt aacacttaaa tatggttaag actcgaatgc anaaatttgg 240
ttggttggaa agctaattaa acttccaact tgctcaaata gaattacaaa aaggcaaaat 300
tgtgtttttc acagagatac agtccactgg aatcaccaac actggacagc tgttagagta 360
tttagagtcc tgagataaca aggaatccag gcatccttta nacagtcttc tgttgtcctt 420
tcttcccaat cagagatttg tggatgtgtg gaatgacacc accaccagca attgtagcct 480
tgatgagaga atccaattct tcatctccac gaatagcaag ttgcaagtga cgagggg 537

<210> 237
<211> 59
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 28
<223> n = A,T,C or G

<400> 237
ggccgccctt ttttttttt tttcggangc aaccagcaaa aggctttatt gggaccacg 59

<210> 238
<211> 242
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 3, 33, 46, 56, 89, 95, 122, 136, 191, 208
<223> n = A,T,C or G

<400> 238
canaaaccaa aacaatcact ggatgtgaca canactgaca atcaanaagt ctacancagg 60
atgggaaagg cgggcagaga aaggggaana aaggnaaaag gagagttaca agttgccaac 120
tncaccatta cccctnctaa gagaggctgg agagaaagcc acaaacatta agaagtgccg 180
gtcctgaata ngggaggtgg tgtttganct tgaaggagga ggaggtcaag aaagggggc 240
ca 242

<210> 239
<211> 502
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 419
<223> n = A,T,C or G

<400> 239
ggccgcgtcg acgtgagtgg cgggcgcggg gtccagcctt ttcctccgcg cctcacccct 60
tctccgttcg cagaaccgtc cgcctgcgcc ccctccgctc cctcccgcgg gtcccgcgcc 120
cctctccgct cgtcccctcc tccacccaaa gcccgttctg cgctcgcgcc gcggtctcct 180
gcagttccca gcggcctctc tgggggtcgg acctggtcac tgcgcgcact tatctcaggt 240
ggcgggggccc gtggacggcg gcgacctgga tcctgtggcc tgcttcctga gctggtgccg 300
gcgggtgggg ctggagctga gtcccaaggt ggcggtcagc cggcagggca cggtggccgg 360
ctacggcatg gtggcccggg agagcgtgca ggccggagag ctgctgttcg tggtgccgng 420
ggccgcgctc ctgtcgcagc acacctgctc catcggcggc ctgctggagc gagagcgagt 480
tgcgctgcaa agccagtcgg gc 502

<210> 240
<211> 487
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 92
<223> n = A,T,C or G

<400> 240
ggccgcgtcg accgctgtgc gaggccgcgg gctgcgggag tgccctgctc tggcctcgct 60
tgttgctctt cggggactcc atcacccagt tntccttcca gcagggtgga tggggagcat 120
cgctggctga caggctggtc agaaaatgtg atgttctgaa tcgtggattt tcaggttaca 180
ataccaggtg ggccaaaatt atccttccaa gattaatcag gaaaggaaac agtttggaca 240
tcccagtagc agttacaatt ttctttgggg ccaatgacag tgcactaaaa gatgagaatc 300
ccaagcagca cattcccctg gaggagtacg ctgcgaacct aaagagcatg gtgcagtacc 360
tgaagtccgt ggacatccct gagaatcgag tcattctcat cacgccgacc ccactttgtg 420
aaacagcctg ggaagaacag tgcatcatac aaggttgcaa actaaatcgc ctgaactctg 480
ttgttgg 487

<210> 241
<211> 404
<212> DNA
<213> Homo sapiens

<400> 241
ggccgcgtcg acggccgcct ccctaccgct ccaagcccag ccctcagcca tggcatgccc 60
cctggatcag gccattggcc tcctcgtggc catcttccac aagtactccg gcagggaggg 120
tgacaagcac accctgagca agaaggagct gaaggagctg atccagaagg agctcaccat 180
tggctcgaag ctgcaggatg ctgaaattgc aaggctgatg gaagacttgg accggaacaa 240
ggaccaggag gtgaacttcc aggagtatgt caccttcctg ggggccttgg ctttgatcta 300
caatgaagcc ctcaagggct gaaaataaat agggaagatg gagacaccct ctgggggtcc 360
tctctgagtc aaatccagtg gtgggtaatt gtacaataaa tttt 404

<210> 242
<211> 558
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 480
<223> n = A,T,C or G

<400> 242
ggccgcgtcg acgcggctcc gcgagcttct ctccactttc ccatagagaa accctgactg 60
gccgctgagg gctagctaca cacacgccct cacgcccggc gagcccgcga ggtcactatc 120
atatgacaaa ggctttgccg cagttcatct tcctccctgt gtactttcca tttgccttcc 180
tggaatcctg ctgcatcaca gaagctggaa gttctgatgt tccactgaaa tcacaatgga 240
aagtcttgac ttgactggtc acagtaatga aaggcagtaa tagaaataag gatcattcag 300
cagaaggaga aggggttgga aaacgaccaa aacgaaagtg tcttcagtgg catccattgc 360
tagcaaagaa acttcttgat ttttcagaag aggaagaaga ggaagacgaa gaggaggata 420
ttgataaggt tcaacttctt ggggccgatg gcctagagca agatgttggt gaaactgaan 480
gatgatgaat caccagagca gcgagcccgg agaccaatga atgcatttct tttattttgc 540
aacgccatcg ctctcttg 558

<210> 243
<211> 161
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 72, 98, 134, 145, 146, 147, 150, 153
<223> n = A,T,C or G

<400> 243
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 60
ttttttgcca cngggggggt tttattttca ttattcanaa aaaaaatttt ttaaaaaatc 120
ccggggcaaa ccgnaaaatt tggcnnnccn atnggggggg g 161

<210> 244
<211> 497
<212> DNA
<213> Homo sapiens

<400> 244
ggccgcgtcg acatggaggg tacgtaacct caatggtcct gggatcggga agtggcgtgt 60
tcaagtgtgg aatagccgtg gcgcctgtat cccggtggga gtactatgac tcagtgtaca 120
cagaacgtta catgggtctc ccaactccag aagacaacct tgaccattac agaaattcaa 180
cagtcatgag cagagctgaa aattttaaac aagttgagta cctccttatt catggaacag 240

cagatgataa cgttcacttt cagcagtcag ctcagatctc caaagccctg gtcgatgttg 300
gagtggattt ccaggcaatg tggtatactg atgaagacca tggaatagct agcagcacag 360
cacaccaaca tatatatacc cacatgagcc acttcataaa acaatgtttc tctttacctt 420
agcacctcaa aataccatgc catttaaagc ttattaaaac tcatttttgt tttcattaaa 480
aaaaaaaaaa aaagggc 497

<210> 245
<211> 509
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 40, 54, 83, 92, 105, 115, 146, 170, 205, 254, 263, 272, 285, 312, 346, 462, 480, 493
<223> n = A,T,C or G

<400> 245
ggccgccctt tttttttttt tttttttttt tttttttttn gggtaccaaa tttntttatt 60
tgaaggaatg gtacaaatca aanaacttaa gnggatgttt tggtncaact tatanaaaag 120
gtaaaggaaa ccccaacatg catgcnctgc cttggtgacc agggaagtcn ccccacggct 180
atggggaaat tagcccgagg cttanctttc attatcactg tctcccaggg tgtgcttgtc 240
aaagagatat tccnccaagc canattcggg cnctcccatc ttgcncaagt tggtcacgtg 300
gtcacccaat tntttgatgg ctttcacctg ctcattcagg taatgngtct caatgaagtc 360
acacaaatgg gggtcatttt tgtcagtggc cagtttgtgc agttccagta gtgactgatt 420
cacatttttt tccaaatgta atgcacactc cattgcattc ancccgctct cccagtcatn 480
acagtctggt ttnttgatat cctgaagga 509

<210> 246
<211> 95
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 73, 78
<223> n = A,T,C or G

<400> 246
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 60
tttttttttt ttnaaaangg gcccaaaaaa aattt 95

<210> 247
<211> 261
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 24, 71, 95, 105, 155, 158, 160, 190
<223> n = A,T,C or G

<400> 247
ggccgccctt tttttttttt tttnggatgc aaacagcaaa gggctttatt gggaacacgg 60
gtacccgggc nactcagtct atcggatgac tggcncaccg agtgnggggt ttttaccctt 120
tttatagggc tggggagcaa aaagcgcggt tacanaancn agaagcgagc tgattggtta 180
gtttaaatan ggctggggt ttttcccggc cccttgggga acttgaaact gaggtgggac 240
tttccaaaaa ctgttgctag t 261

<210> 248
<211> 493
<212> DNA

<213> Homo sapiens

<400> 248
ggccgcgtcg acgcgcgcgc ttgcggacgc ggcggcatta aacggttgca ggcgtagcag 60
agtggtcgtt gtctttctag gtctcagccg gtcgtcgcga cgttcgcccg ctcgctctga 120
ggctcctgaa gccgaaacca gctagacttt cctccttccc gcctgcctgt agcggcgttg 180
ttgccactcc gccaccatgt tcgaggcgcg cctggtccag ggctccatcc tcaagaaggt 240
gttggaggca ctcaaggacc tcatcaacga ggcctgctgg gatattagct ccagcggtgt 300
aaacctgcag agcatggact cgtcccacgt ctctttggtg cagctcaccc tgcggtctga 360
gggcttcgac acctaccgct gcgaccgcaa cctggccatg ggcgtgaacc tcaccagtat 420
gtccaaaata ctaaaatgcg ccggcaatga agatatcatt acactaaggg ccgaagataa 480
cgcggatacc ttg 493

<210> 249
<211> 567
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 340, 388, 487
<223> n = A,T,C or G

<400> 249
ggccgccctt tttttttttt tttatttcta tatgatttta ataatgttcc ctaagtaatt 60
agtaatcaag atttcttca aattcaaatt aacaaatatg tttgttaatc taaataatat 120
acatatttat gtatttatat atgtatatat tttaatcttt ctgtaattca gtctttaact 180
gtgaactttt acatgatgga agcagtgaag gactcaatgt catagtacat tttgatagta 240
tttgataggc tttttcaggt caattaattt agttgcttgc aaatataaat caagcttgct 300
ccagttccac aaggactcca ccacagtctt taggatggan aaaaatcact ggttttccat 360
gtgctcctat tttgacctct tcacttanac tgcggatctt ctttttttc aaatccatca 420
cagctgcatt aatattatcc acctcgatgc agatgtgatg cattcctcca gccttgtttt 480
tctgcanaaa acctgcaatt ggactgtcac gtcccaatgg atgaagcagt tccatcttgg 540
tatttcccag gttgacaaaa caacaga 567

<210> 250
<211> 512
<212> DNA
<213> Homo sapiens

<400> 250
ggccgcgtcg acggcggcag ccatcaggta agccaagatg ggtgcataca agtacatcca 60
ggagctatgg agaaagaagc agtctgatgt catgcgcttt cttctgaggg tccgctgctg 120
gcagtaccgc cagctctctg ctctccacag ggctccccgc ccccacccggc ctgataaagc 180
gcgccgactg ggctacaagg ccaagcaagg ttacgttata tataggattc gtgttcgccg 240
tggtggccga aaacgcccag ttcctaaggg tgcaacttac ggcaagcctg tccatcatgg 300
tgttaaccag ctaaagtttg ctcgaagcct tcagtccgtt gcagaggagc gagctggacg 360
ccactgtggg gctctgagag tcctgaattc ttactgggtt ggtgaagatt ccacatacaa 420
attttttgag gttatcctca ttgatccatt ccataaagct atcagaagaa atcctgacac 480
ccagtggatc accaaaccag tccacaagca ca 512

<210> 251
<211> 434
<212> DNA
<213> Homo sapiens

<400> 251
ggccgcgtcg acgtttgccg ccagaacaca ggtgtcgtga aaactacccc taaaagccaa 60
aatgggaaag gaaaagactc atatcaacat tgtcgtcatt ggacacgtag attcgggcaa 120
gtccaccact actggccatc tgatctataa atgcggtggc atcgacaaaa gaaccattga 180
aaaatttgag aaggaggctg ctgagatggg aaagggctcc ttcaagtatg cctgggtctt 240
ggataaactg aaagctgagc gtgaacgtgg tatcaccatt gatatctcct tgtggaaatt 300

tgagaccagc aagtactatg tgactatcat tgatgcccca ggacacagag actttatcaa 360
aaacatgatt acagggacat ctcaggctga ctgtgctgtc ctgattgttg ctgctggtgt 420
tggtgaattt gaag 434

<210> 252
<211> 491
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 68, 79, 84, 91, 120, 128, 143, 215, 268, 278, 287, 299, 314, 318, 347, 357, 440, 474, 476, 479
<223> n = A,T,C or G

<400> 252
ggccgccctt tttttttttt tttttttttg gaaattcaag taactttatt taaattcaaa 60
aacaattntt aaaactgcnt ttanagtcaa nacccttttg tattataaaa atcacaagtn 120
tttctaanag acaaaaatac ttntaggtta actagaccag atctgacttt ggactttatt 180
ctttaaacaa attgcagaga atagagaaaa aaatnggtta tttacagaaa acaatatcta 240
catatgtact tagaggtaca aatttggnga cagaaaanac ttcagtntat gctggcatnt 300
taaaagcagt tctnaaanag cttagtttta ttttcttgaa ttttaanaat gcctaanatc 360
cttcttcatc ctcgatcttg ggagccaagt agtattttaa gtgtcccata tccgcaattt 420
tatactctac aacaaggggn acatctgcag acatactgag tgtcaccgtt gaananagng 480
gagtggcttt t 491

<210> 253
<211> 472
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 250, 327, 399, 470
<223> n = A,T,C or G

<400> 253
ggccgccctt tttttttttt ttttttcgga tgcaaacagc aaaaggcttt attgggaaca 60
cgggtacccg ggcgactcag tctatcggat gactggcgca ccgagtgtgg ggtttttacc 120
ctttttatag ggctggggag caaaaagcgc ggttacagaa gcgagaagcg agctgattgg 180
ttagtttaaa taaggcttgg ggtttttccc ggtcttttgg ggaacttgaa actgaggtgg 240
gactttccan aaactgttgc tagtttcgct ttatctgagt accatctgtt cttggccctg 300
agccggggcc caggtgctcg accacanata tcctgtttgg cccctgtccc agttttgttc 360
agccttattc tttaactaaa cttccttgtg acttttgana actcagctct ggtacttttt 420
catgccttgc aaaatggcgt tactgcagct agcttgctaa gccttatggn gg 472

<210> 254
<211> 139
<212> DNA
<213> Homo sapiens

<400> 254
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaaccattc 60
gtagacgacc tgcttctggg tcggggtttc gtacgtagca gagcagctcc ctcgctgcga 120
tctattgaaa ggtcgacgc 139

<210> 255
<211> 213
<212> DNA
<213> Homo sapiens

<400> 255

ggccgccctt tttttttttt tttcggatgc aaacagcaaa aggctttatt gggaacacgg 60
gtacccgggc gactcagtct atcggatgac tggcgcaccg agtgtggggt ttttaccctt 120
tttatagggc tggggagcaa aaagcgcggt tacagaagcg agaagcgagc tgattggtta 180
gtttaaataa ggcttggggt ttttcccggt ctt 213

<210> 256
<211> 501
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 225, 501
<223> n = A,T,C or G

<400> 256
ggccgccctt tttttttttt tttgtaaagc tctgccataa acttctagcg tgtgccaatg 60
gtcacctgcc acactcgcac caggttgtcc gtgtagccag caaacagagt ctggccatca 120
gcagaccagg ccagggaggt gcactggggt ggttctgcct tgctgctggt actgataact 180
tcttgcttca gttcatctac aatgatcttt ccctctaaat cccanatctt gatgctgggg 240
cctgtggcag cacacagcca gtagcggtta gggctgaagc acagggcgtt gatgatgtcc 300
ccaccatcta gcgtgtaaag gtgtttgcct tcgttgagat cccataacat ggcctggcca 360
tccttgcctc cagaagcaca gagggatcca tctggagaga cagtcaccgt gttcagatag 420
cctgtgtggc caatgtggtt ggtcttcagc ttgcagttag ccaggttcca taccttgacc 480
agcttgtccc agccacagga n 501

<210> 257
<211> 509
<212> DNA
<213> Homo sapiens

<400> 257
ggccgcgtcg acccatcatg gcgcaggatc aaggtgaaaa ggagaacccc atgcgggaac 60
ttcgcatccg caaactctgt ctcaacatct gtgttgggga gagtggagac agactgacgc 120
gagcagccaa ggtgttggag cagctcacag ggcagacccc tgtgttttcc aaagctagat 180
acactgtcag atcctttggc atccggagaa atgaaaagat tgctgtccac tgcacagttc 240
gaggggccaa ggcagaagaa atcttggaga agggtctaaa ggtgcgggag tatgagttaa 300
gaaaaaacaa cttctcagat actggaaact ttggttttgg gatccaggaa cacatcgatc 360
tgggtatcaa atatgaccca agcattggta tctacggcct ggacttctat gtggtgctgg 420
gtaggccagg tttcagcatc gcagacaaga agcgcaggac aggctgcatt ggggccaaac 480
acagaatcag caaagaggag gccatgcgc 509

<210> 258
<211> 504
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 101, 135, 253
<223> n = A,T,C or G

<400> 258
ggccgccctt tttttttttt tttagtttat aatgttttac tatgatttag ggcttttttt 60
tcaaagaaca aaaattataa gcataaaaac tcaggtatca naaagactca aaaggctgtt 120
tttcactttg ttcanatttt gtttccaggc attaagtgtg tcatacagtt gttgccactg 180
ctgttttcca aatgtccgat gtgtgctatg actgacaact acttttctct gggtctgatc 240
aattttgcag tanaccattt tagttcttac ggcgtcaata acaaatgctt caacatcatc 300
agctccaatc tgaagttctt gctgcattgt gtcaaaagaa atttccttat tttctactgc 360
cattcccata aaagtaagta gtctcatttt tgccatattc tgttcatgta acaggccaag 420
tgaatcaatg aagtctttat tattctgata aaacttgaca tatgatgcca atttagcact 480
cacaaaaatg gttaaaagat catg 504

<210> 259
<211> 494
<212> DNA
<213> Homo sapiens

<400> 259
ggccgcgtcg accaagtctc attttaaaat atcaccactt ggacttctct ttcttggatc 60
actgtaccta aaaataaacc agcacatgcc tgagatcatg tcgaacagat gaatgaatga 120
atgaatgaat gaattctgaa catcgcagat gccaaatatc cactaaccta aatatactgt 180
gcttcttcct ctaaacacga tttatctggt ccatgaagtt atatttctgc cctatgcaat 240
taatcatgcc atcaaccttc aaaactaagt cattatgagt ctagcattta agttcccatg 300
ttgtcagacc cctaaactct aatgtctgtc ttgtttccta ctatttctca atataaacta 360
gggagtcctt ctgggttagt ccgctccttc atcaacaaac aggcctggtg gtttttgact 420
actgacttac ctcacagaga taacttctgg ccagagtgta cttccctctc ttctaactaa 480
tgagcccact gatg 494

<210> 260
<211> 445
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 45, 47, 51, 93, 95, 109, 133, 136, 197, 204, 225, 250, 291, 295, 305, 308, 318, 396, 437
<223> n = A,T,C or G

<400> 260
ggccgccctt tttttttttt tttttttttt tttttttttt tttanantaa ngacttttat 60
tttttcaca cccaagttag cctgagttga ctntnattgt tcccctatnt acccacagtc 120
cccatccaac acnaanaaat atttgctttc acattacagc ataaagacca cctaagcttt 180
gacagctgac ttgtagnggg tcancgtgcg ggcaaaaggg tcagnggcat tgatccactt 240
gggcatccan taatggctca accagtcagc ccggcctggg taatggcgtt naaanacttg 300
acggnagnaa tatccttntt tggttttagg agtattgaag ggaaatttct gggctgcatt 360
tgccatcatt gcatcatcaa cctgatgttc aacgtnttcc tgtaaaatct taaaccagga 420
attcttaact gaagttnttc catca 445

<210> 261
<211> 554
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 40, 390, 491, 540
<223> n = A,T,C or G

<400> 261
ggccgccctt tttttttttt tttttaaatt tccaatgaan aaatgtggct tcaaaactct 60
ctgcggcgcg agccagttgc ctccaggcca gcctctccct aggccttgct ttgtttctgg 120
gcatcacact ctgacctgca ggacccgcac ttggcaatca gcttaaacct acctcggcat 180
tttaatgagc cagactgcca tctcctccca cactgcccgc tctctcctgg aagaacacac 240
ctttcctaat tctgtttgtt caccagaaaa ataaataaat aataataagc gggggagggg 300
gtgtgggttt actggaaggt cattttgcct taggaaagga acaaattaag tcgaggctca 360
cagtgagccg ggaaatacat tctccatcan acaagcgacc ttggggcctt cggttttagg 420
cgggaaaggt cactggtaag gcagcccctt gtttatggag cccggatacc aatgacgtgg 480
tcacctccga naagcacaat taccaacagg ggcacgccaa actcttttat tggttacctn 540
ttaaacgtcg acgc 554

<210> 262
<211> 74

```
<212> DNA
<213> Homo sapiens

<400> 262
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 60
ggggaaaaac caaa                                                    74

<210> 263
<211> 476
<212> DNA
<213> Homo sapiens

<400> 263
ggccgccctt tttttttttt tttaagtaat taaatattta tagggttgtt caccaaaggg 60
ttgcatacca taaatacagc attttatgcc tttatagtat cattttaaaa atggggataa 120
tcacagccat ttcatagttc ttatgaagat catgtaaatt agtgtgtata gctatacaaa 180
tataaggtgc atttattgtt attcaatttt atattagatt atggcagcat aaagaaatga 240
gtaacagcat ggactcccaa acaataggtt caaatctttg ctgtttcaaa tctttgctgt 300
ttctcactgt tcaaatcttt gctgtttctc actgtttaac cttggggagg tttcttaacc 360
tgcttgtgcc tctgtttgct catttgtaaa atcgggataa taagaaaatc tatctcatct 420
ggttgttata agaattaact gagttaatat gggtaagcac ttagtgcctg gcatgt     476

<210> 264
<211> 389
<212> DNA
<213> Homo sapiens

<400> 264
ggccgcgtcg acctcaccag cattttccac agagatgcaa attctgagcc cttggagttc 60
ccagtggatt caaggaagga agtgggaaca aggttggatg cctacttatg agcttgacca 120
tcacagctat cggtaatcag aaatatgaaa caaaatctct gcacaaaaga gcaagctctt 180
aagttcacag ggtgcctggg ctgcatttga atatcacttc ccctctgcat tttcccatca 240
catagaagac tttgacctgt gaagctgcca tctgttaata ctaaaattcc caaataaggt 300
tctgtttaga atgtcccttt ttatgcttct taattattag cagtaaatgt tcatttttat 360
gggatcctaa aaaaaaaaaa aaaaagggc                                   389

<210> 265
<211> 505
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 246, 437, 471
<223> n = A,T,C or G

<400> 265
ggccgccctt tttttttttt tttttgccag tttttttttt atttgtaaag ctctgccata 60
aacttctagc gtgtgccaat ggtcacctgc cacactcgca ccaggttgtc cgtgtagcca 120
gcaaacagag tctggccatc agcagaccag gccagggagg tgcactgggg tggttctgcc 180
ttgctgctgg tactgataac ttcttgcttc agttcatcta caatgatctt tccctctaaa 240
tcccanatct tgatgctggg gcctgtggca gcacacagcc agtagcggtt agggctgaag 300
cacagggcgt tgatgatgtc cccaccatct agcgtgtaaa ggtgtttgcc ttcgttgaga 360
tcccataaca tggcctggcc atccttgcct ccagaagcac agagggatcc atctggagag 420
acagtcaccg tgttcanata gcctgtgtgg ccaatgtggg ttggtcttca ncttgcagtt 480
agccaggttc catacсttga ccagc                                        505

<210> 266
<211> 547
<212> DNA
<213> Homo sapiens
```

<220>
<221> misc_feature
<222> 505
<223> n = A,T,C or G

<400> 266
ggccgcgtcg acgcggcggc aggagaggtt gtggtgctag tttctctaag ccatccagtg 60
ccatcctcgt cgctgcagcg acacacgctc tcgccgccgc catgactgag cagatgaccc 120
ttcgtggcac cctcaagggc cacaacggct gggtaaccca gatcgctact accccgcagt 180
tcccggacat gatcctctcc gcctctcgag ataagaccat catcatgtgg aaactgacca 240
gggatgagac caactatgga attccacagc gtgctctgcg gggtcactcc cactttgtta 300
gtgatgtggt tatctcctca gatggccagt ttgccctctc aggctcctgg gatggaaccc 360
tgcgcctctg ggatctcaca acgggcacca ccacgaggcg atttgtgggc cataccaagg 420
atgtgctgag tgtggccttc tcctctgaca accggcagat tgtctctgga tctcgagata 480
aaaccatcaa gctatggaat acccntgggt gtgtgcaaat acactgtcca ggatgagagc 540
cactcag 547

<210> 267
<211> 511
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 475, 487
<223> n = A,T,C or G

<400> 267
ggccgcgtcg acgccggggg tgccctgcaa gctgttccgc gcgtcctgcc cgtctgtccc 60
cgcgggtcgt cgcccgccac agccgcgcca tgaccaccca gcagatagac ctccagggcc 120
cggggccgtg ggcttccgc ctcgtgggcg gcaaggactt cgagcagcct ctcgccattt 180
cccgggtcac tcctggaagc aaggcggctc tagctaattt atgtattgga gatgtaatca 240
cagccattga tggggaaaat actagcaata tgacacactt ggaagctcag aacagaatca 300
aaggctgcac agacaacttg actctcactg tagccagatc tgaacataaa gtctggtctc 360
ctctggtgac ggaggaaggg aagcgtcatc catacaagat gaatttagcc tctgaacccc 420
aggaggtcct gcacatagga agcgcccaca accgaagtgc catgcccttt accgnctcgc 480
ctgcctncag cactactgcc agggtcatca c 511

<210> 268
<211> 548
<212> DNA
<213> Homo sapiens

<400> 268
ggccgcgtcg acggcggcgg caggagaggt tgtggtgcta gtttctctaa gccatccagt 60
gccatcctcg tcgctgcagc gacacacgct ctcgccgccg ccatgactga gcagatgacc 120
cttcgtggca ccctcaaggg ccacaacggc tgggtaaccc agatcgctac taccccgcag 180
ttcccggaca tgatcctctc cgcctctcga gataagacca tcatcatgtg gaaactgacc 240
agggatgaga ccaactatgg aattccacag cgtgctctgc ggggtcactc ccactttgtt 300
agtgatgtgg ttatctcctc agatggccag tttgccctct caggctcctg ggatggaacc 360
ctgcgcctct gggatctcac aacgggcacc accacgaggc gatttgtggg ccataccaag 420
gatgtgctga gtgtggcctt ctcctctgac aaccggcaga ttgtctctgg atctcgagat 480
aaaaccatca agctatggaa taccctgggt gtgtgcaaat acactgtcca ggatgagagc 540
cactcaga 548

<210> 269
<211> 544
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature

<222> 296, 340, 350
<223> n = A,T,C or G

<400> 269
ggccgccctt tttttttttt tttgaaattc aagtaacttt atttaaattc aaaaacaatt 60
cttaaaactg catttagagt caagaccctt ttgtattata aaaatcacaa gtatttctaa 120
gagacaaaaa tacttctagg ttaactagac cagatctgac tttggacttt attctttaaa 180
caaattgcag agaatagaga aaaaaatagg ttatttacag aaaacaatat ctacatatgt 240
acttagaggt acaaatttgg tgacagaaaa gacttcagta tatgctggca tcttanaagc 300
agttctcaaa gagcttagtt ttattttctt gaattttaan aatgcctaan atccttcttc 360
atcctcgatc ttgggagcca agtagtattt taagtgtccc atatccgcaa ttttatactc 420
tacaacaagg ggtacatctg cagacatact gagtgtcacc gttgaagaga gtggagtggc 480
ttttgtaaag aagttcaggt acctcagtgc aaaagttagt tgaactggtt cattcatctc 540
tatg 544

<210> 270
<211> 515
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 347, 373, 391, 427
<223> n = A,T,C or G

<400> 270
ggccgcgtcg accttttttt tttttttgg ttgagcacag ggtactttat tgatggtaca 60
tgacaaggtg cggctcccta ggcccctccc ctcttcaagg ggtctacatg gaaactgtga 120
ggagggggaga ttcagtgtgg tgggggactg agtgtggcag ggactcccca gcagtgaggg 180
tctctctctt cctcttgtgc tcttgctggg gctggtggtc caggggtctt actccttgga 240
ggccatgtgg gccatgaggt ccaccaccct gttgctgtag ccaaattcgt tgtcatacca 300
ggaaatgagc ttgacaaagt ggtcgttgag ggcaatgcca gccccancgt caaaggtgga 360
ggagtgggtg tcnctgttga agtcagagga naccacctgg tgctcagtgt agcccaggat 420
gcccttnagg gggccctccg acgcctgctt caccaccttc ttgatgtcat catatttggc 480
aggtttttct agacggcagg tcaggtccac cactg 515

<210> 271
<211> 512
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 386, 407, 412, 433
<223> n = A,T,C or G

<400> 271
ggccgccctt tttttttttt tttggttgag cacagggtac tttattgatg gtacatgaca 60
aggtgcggct ccctaggccc ctcccctctt caaggggtct acatggcaac tgtgaggagg 120
ggagattcag tgtggtgggg gactgagtgt ggcagggact ccccagcagt gagggtctct 180
ctcttcctct tgtgctcttg ctggggctgg tggtccaggg gtcttactcc ttggaggcca 240
tgtgggccat gaggtccacc accctgttgc tgtagccaaa ttcgttgtca taccaggaaa 300
tgagcttgac aaagtggtcg ttgagggcaa tgccagcccc agcgtcaaag gtggaggagt 360
gggtgtcgct gttgaagtca gagganacca cctggtgctc agtgtanccc anggatgccc 420
ttgaggggc ccntccgacg cctgcttcac caccttcttg atgtcatcat atttggcagg 480
tttttctaga cggcaggtca ggtccaccac tg 512

<210> 272
<211> 113
<212> DNA
<213> Homo sapiens

<400> 272
ggccgccctt tttttttttt tttttttgta gtcagcactg ttagtattca acactttaat 60
atttatgtga tacaccataa atattaaagt gttgaatact tttgcgtcga cgc 113

<210> 273
<211> 455
<212> DNA
<213> Homo sapiens

<400> 273
ggccgcgtcg acgcgagtgg gagcaccagg atctcgggct cggaacgaga ctgcacggat 60
tgttttaaga aaatggcaga caaaccagac atgggggaaa tcgccagctt cgataaggcc 120
aagctgaaga aaacggagac gcaggagaag aacaccctgc cgaccaaaga gaccattgag 180
caggagaagc ggagtgaaat ttcctaagat cctggaggat ttcctacccc cgtcctcttc 240
gagaccccag tcgtgatgtg gaggaagagc cacctgcaag atggacacga gccacaagct 300
gcactgtgaa cctgggcact ccgcgccgat gccaccggcc tgtgggtctc tgaagggacc 360
cccccccaat cggactgcca aattctccgg tttgccccgg gatattatag aaaattattt 420
gtatgaataa tgaaaataaa acacacctcg tggca 455

<210> 274
<211> 453
<212> DNA
<213> Homo sapiens

<400> 274
ggccgcgtcg acacgcgagt gggagcacca ggatctcggg ctcggaacga gactgcacgg 60
attgttttaa gaaaatggca gacaaaccag acatggggga aatcgccagc ttcgataagg 120
ccaagctgaa gaaaacggag acgcaggaga agaacaccct gccgaccaaa gagaccattg 180
agcaggagaa gcggagtgaa atttcctaag atcctggagg atttcctacc cccgtcctct 240
tcgagacccc agtcgtgatg tggaggaaga gccacctgca agatggacac gagccacaag 300
ctgcactgtg aacctgggca ctccgcgccg atgccaccgg cctgtgggtc tctgaaggga 360
cccccccca atcggactgc caaattctcc ggtttgcccc gggatattat agaaaattat 420
ttgtatgaat aatgaaaata aaacacacct cgt 453

<210> 275
<211> 139
<212> DNA
<213> Homo sapiens

<400> 275
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaaccattc 60
gtagacgacc tgcttctggg tcggggtttc gtacgtagca gagcagctcc ctcgctgcga 120
tctattgaaa ggtcgacgc 139

<210> 276
<211> 469
<212> DNA
<213> Homo sapiens

<400> 276
ggccgcgtcg accggatttc taccccttacc attgaggagg gaaatctgga cattcaaaga 60
ccaaagagga agaggaagaa ctcacgggtg acattcagtg aggatgatga gatcatcaac 120
ccagaggatg tggatccctc agttggtcga ttcaggaaca tggtgcaaac tgcagtggtc 180
ccagtcaaga agaagcgtgt ggagggccct ggctccctgg gcctggagga atcagggagc 240
aggcgcatgc agaactttgc cttcagcgga ggactctacg gggcctgcc ccccacacac 300
agtgaagcag gctcccagcc acatggcatc catgggacag cactcatcgg tggcttgccc 360
atgccatacc caaaccttgc ccctgatgtg gacttgactc ctgttgtgcc gtcagcagtg 420
aacatgaacc ctgcaccaaa ccctgcagtc tataaccctg aagctgtaa 469

<210> 277
<211> 611
<212> DNA

<213> Homo sapiens

<400> 277
ggccgcgtcg actcggtggt gcaggccctg gttctgaccc aacagtatca ccaactcaaa 60
tcaatagatc cagaagaagt agaatcgcgt gaataaaaga ttttattcag tttccagaaa 120
gaggggggaa tgaaagaccc caccataagg cttagcaagc tagctgcagt aacgccattt 180
tgcaaggcat gaaaaagtac cagagctgag ttctcaaaag tcacaaggaa gtttagttaa 240
agaataaggc tgaacaaaac tgggacaggg gccaaacagg atatctgtgg tcgagcacct 300
gggccccggc tcagggccaa gaacagatgg tactcagata aagcgaaact agcaacagtt 360
tctggaaagt cccacctcag tttcaagttc cccaaaagac cgggaaaaac cccaagcctt 420
atttaaacta accaatcagc tcgcttctcg cttctgtaac cgcgcttttt gctccccagc 480
cctataaaaa gggtaaaaac ccccacactcg gtgcgccagt catccgatag actgagtcgc 540
ccgggtaccc gtgttcccaa taaagccttt tgctgtttgc atccgaaaaa aaaaaaaaaa 600
aaaaaaaggg c 611

<210> 278
<211> 82
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 68, 71, 72, 73, 75, 76
<223> n = A,T,C or G

<400> 278
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 60
ttttttttngg nnnannaaaa tt 82

<210> 279
<211> 82
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 54
<223> n = A,T,C or G

<400> 279
ggccgcgtcg actgcaaggc ggcggcagga gaggttgtgg tgctagtttc tctnagccat 60
ccagtgccat cctcgtcgct gc 82

<210> 280
<211> 139
<212> DNA
<213> Homo sapiens

<400> 280
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaaccattc 60
gtagacgacc tgcttctggg tcggggtttc gtacgtagca gagcagctcc ctcgctgcga 120
tctattgaaa ggtcgacgc 139

<210> 281
<211> 468
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 250, 389, 399
<223> n = A,T,C or G

<400> 281
ggccgccctt tttttttttt ttttttcgga tgcaaacagc aaaaggcttt attgggaaca 60
cgggtacccg ggcgactcag tctatcggat gactggcgca ccgagtgtgg ggtttttacc 120
ctttttatag ggctggggag caaaaagcgc ggttacagaa gcgagaagcg agctgattgg 180
ttagtttaaa taaggcttgg ggtttttccc ggtcttttgg ggaacttgaa actgaggtgg 240
gactttccan aaactgttgc tagtttcgct ttatctgagt accatctgtt cttggccctg 300
agccggggcc caggtgctcg accacagata tcctgtttgg cccctgtccc agtttgttc 360
agccttattc tttaactaaa cttccttgng acttttgana actcagctct ggtacttttt 420
catgccttgc aaaatggcgt tactgcagct agcttgctaa gccttatg 468

<210> 282
<211> 592
<212> DNA
<213> Homo sapiens

<400> 282
ggccgcgtcg acgtaggtct acaagacgct acttccccta tcatagaaga gcttatcacc 60
tttcatgatc acgccctcat aatcattttc cttatctgct tcctagtcct gtatgccctt 120
ttcctaacac tcacaacaaa actaactaat actaacatct cagacgctca ggaaatagaa 180
accgtctgaa ctatcctgcc cgccatcatc ctagtcctca tcgccctccc atccctacgc 240
atcctttaca taacagacga ggtcaacgat ccctccctta ccatcaaatc aattggccac 300
caatggtact gaacctacga gtacaccgac tacggcggac taatcttcaa ctcctacata 360
cttcccccat tattcctaga accaggcgac ctgcgactcc ttgacgttga caatcgagta 420
gtactcccga ttgaagcccc cattcgtata ataattacat cacaagacgt cttgcactca 480
tgagctgtcc ccacattagg cttaaaaaca gatgcaattc ccggacgtct aaaccaaacc 540
actttcaccg ctacacgacc gggggtatac tacggtcaat gctctgaaat ct 592

<210> 283
<211> 454
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 32, 66, 98, 100, 108, 165, 250, 327, 362, 389, 399, 406
<223> n = A,T,C or G

<400> 283
ggccgccctt tttttttttt tttttttttt tngaaacagc aaaaggcttt attgggaaca 60
cgggtncccg ggcgactcag tctatcggat gactggcncn ccgagtgngg ggtttttacc 120
ctttttatag ggctggggag caaaaagcgc ggttacagaa gcganaagcg agctgattgg 180
ttagtttaaa taaggcttgg ggtttttccc ggtcttttgg ggaacttgaa actgaggtgg 240
gactttccan aaactgttgc tagtttcgct ttatctgagt accatctgtt cttggccctg 300
agccggggcc caggtgctcg accacanata tcctgtttgg cccctgtccc agtttgttc 360
anccttattc tttaactaaa ctttcttgng acttttgana actcanctct ggtacttttt 420
catgccttgc aaaatggcgt tactgcagct agct 454

<210> 284
<211> 612
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 585
<223> n = A,T,C or G

<400> 284
ggccgcgtcg accaagacgc tacttcccct atcatagaag agcttatcac ctttcatgat 60
cacgccctca taatcatttt ccttatctgc ttcctagtcc tgtatgccct tttcctaaca 120
ctcacaacaa aactaactaa tactaacatc tcagacgctc aggaaataga aaccgtctga 180

actatcctgc ccgccatcat cctagtcctc atcgccctcc catccctacg catcctttac 240
ataacagacg aggtcaacga tccctccctt accatcaaat caattggcca ccaatggtac 300
tgaacctacg agtacaccga ctacggcgga ctaatcttca actcctacat acttccccca 360
ttattcctag aaccaggcga cctgcgactc cttgacgttg acaatcgagt agtactcccg 420
attgaagccc ccattcgtat aataattaca tcacaagacg tcttgcactc atgagctgtc 480
cccacattag gcttaaaaac agatgcaatt cccggacgtc taaaccaaac cactttcacc 540
gctacacgac cgggggtata ctacggtcaa tgctctgaaa tctgnggagc aaaccacagt 600
ttcatgccca tc 612

<210> 285
<211> 150
<212> DNA
<213> Homo sapiens

<400> 285
ggccgcgtcg acgtggagtt tatcattgaa tagagtgcag agaaaggacc gcaagaaagc 60
tgatcacctc agcaatgaat gatttcaata cgatttcacc caaatggtct cacacaccag 120
cctagtaaac cagagataag gtgtaatgtc 150

<210> 286
<211> 608
<212> DNA
<213> Homo sapiens

<400> 286
ggccgcgtcg acggcgtcct cgtggaagtg acatcgtctt taaaccctgc gtggcaatcc 60
ctgacgcacc gccgtgatgc ccagggaaga cagggcgacc tggaagtcca actacttcct 120
taagatcatc caactattgg atgattatcc gaaatgtttc attgtgggag cagacaatgt 180
gggctccaag cagatgcagc agatccgcat gtcccttcgc gggaaggctg tggtgctgat 240
gggcaagaac accatgatgc gcaaggccat ccgagggcac ctggaaaaca acccagctct 300
ggagaaactg ctgcctcata tccgggggaa tgtgggcttt gtgttcacca aggaggacct 360
cactgagatc agggacatgt tgctggccaa taaggtgcca gctgctgccc gtgctggtgc 420
cattgcccca tgtgaagtca ctgtgccagc ccagaacact ggtctcgggc ccgagaagac 480
ctccttttc caggctttag gtatcaccac taaaatctcc aggggcacca ttgaaatcct 540
gagtgatgtg cagctgatca agactggaga caaagtggga gccagcgaag ccacgctgct 600
gaacatgc 608

<210> 287
<211> 239
<212> DNA
<213> Homo sapiens

<400> 287
ggccgcgtcg actaagcagc ctgaggtgat ctgtgaaaat ggttcgctat tcacttgacc 60
cggagaaccc cacgaaatca tgcaaatcaa gaggttccaa tcttcgtgtt cactttaaga 120
acactcgtga aactgctcag gccatcaagg gtatgcatat acgaaaagcc acgaagtatc 180
tgaaagatgt cactttacag aaacagtgtg taccattccg acgttacaat ggtggagtt 239

<210> 288
<211> 139
<212> DNA
<213> Homo sapiens

<400> 288
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgagggggc 139

<210> 289
<211> 180
<212> DNA
<213> Homo sapiens

<400> 289
ggccgcgtcg accgggaagc cgggagctcg gccacgggtg gcgaggctgc ggtgaggcct 60
ggtctccggc tgccagacca tgctgagtgg agcacgctgc aggctcgcct cagcgctgcg 120
gggaacgcgc gcgccgccgt ccgcggtcgc ccgtaggtgc ctgcacgcgt cggggtcgcg 180

<210> 290
<211> 522
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 303
<223> n = A,T,C or G

<400> 290
ggccgccctt tttttttttt tttgatgttt gaaattcaag taactttatt taaattcaaa 60
aacaattctt aaaactgcat ttagagtcaa gacccttttg tattataaaa atcacaagta 120
tttctaagag acaaaaatac ttctaggtta actagaccag atctgacttt ggactttatt 180
ctttaaacaa attgcagaga atagagaaaa aaataggtta tttacagaaa acaatatcta 240
catatgtact tagaggtaca aatttggtga cagaaaagac ttcagtatat gctggcatct 300
tanaagcagt tctcaaagag cttagtttta ttttcttgaa ttttaagaat gcctaagatc 360
cttcttcatc ctcgatcttg ggagccaagt agtattttaa gtgtcccata tccgcaattt 420
tatactctac aacaaggggt acatctgcag acatactgag tgtcaccgtt gaagagagtg 480
gagtggcttt tgtaaagaag ttcaggtacc tcagtgcaaa ag 522

<210> 291
<211> 378
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 25, 28, 48, 214, 216, 224, 266, 310, 343, 374, 375, 376
<223> n = A,T,C or G

<400> 291
ggccgccctt tttttttttt ttttnagngg aaaataactt ttattganac cccaccaact 60
gcaaaatctg ttcctggcat taagctcctt cttcctttgc aattcggtct ttcttcagtg 120
gtcccatgaa tgctttcttc tcctccatgg tctggaagcg gccatggcca aacttggagg 180
tggtgtcaat gaacttaagg tcaatcttct ccanancccg ccgnttcgtc tgcaccagca 240
aggacttgcg gagggtgagc acccgnttct tggttcccac cacacagcct ttcagcatga 300
caaagtcatn ggtcacttca ccatagtgga caaagccacc canagggttg atgctcttgt 360
cagataggtc atannnca 378

<210> 292
<211> 498
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 443
<223> n = A,T,C or G

<400> 292
ggccgcgtcg acggaagtga catcgtcttt aaaccctgcg tggcaatccc tgacgcaccg 60
ccgtgatgcc cagggaagac agggcgacct ggaagtccaa ctacttcctt aagatcatcc 120
aactattgga tgattatccg aaatgtttca ttgtgggagc agacaatgtg ggctccaagc 180
agatgcagca gatccgcatg tcccttcgcg ggaaggctgt ggtgctgatg ggcaagaaca 240

ccatgatgcg caaggccatc cgagggcacc tggaaaacaa cccagctctg gagaaactgc 300
tgcctcatat ccgggggaat gtgggctttg tgttcaccaa ggaggacctc actgagatca 360
gggacatgtt gctggccaat aaggtgccag ctgctgcccg tgctggtgcc attgccccat 420
gtgaagtcac tgtgccagcc canaacactg gtctcgggcc cgagaagacc ttctttttcc 480
aggctttagg tatcacca 498

<210> 293
<211> 619
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 582, 591
<223> n = A,T,C or G

<400> 293
ggccgcgtcg acgcgtgggg cgcccacaat ttgcgcgctc tctttctgct gctccccagc 60
tctcggatac agccgacacc atgggtttcg gagacctgaa aagccctgcc ggcctccagg 120
tgctcaacga ttacctggcg gacaagagct acatcgaggg gtatgtgcca tcacaagcag 180
atgtggcagt atttgaagcc gtgtccagcc caccgcctgc cgacttgtgt catgccctac 240
gttggtataa tcacatcaag tcttacgaaa aggaaaaggc cagcctgcca ggagtgaaga 300
aagctttggg caaatatggt cctgccgatg tggaagacac tacaggaagt ggagctacag 360
atagtaaaga tgatgatgac attgacctct ttggatctga tgatgaggag gaaagtgaag 420
aagcaaagag gctaagggaa gaacgtcttg cacaatatga atcaaagaaa gccaaaaaac 480
ctgcacttgt tgccaagtct tccatcttac tagatgtgaa accttgggat gatgagacag 540
atatggcgaa attagaggag tgcgtcagaa gcattcaagc anacggctta ntctggggct 600
catctaaact agttccagt 619

<210> 294
<211> 410
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 168, 178, 195, 288, 291, 305, 401
<223> n = A,T,C or G

<400> 294
ggccgccctt tttttttttt tttcttatgt acacaatggt ttattaaagg aatgtatggc 60
ccacatcaac ctagcaagga ttctactggt aaaccttcct atggccaaag gaaaaacaag 120
caggagttga gtggctgggg tggggtgcag gcaatggaga gagggcanaa gggtgtanaa 180
gctgaagggg tctanaagct tactcctgag tttcttcctt ctgtcttcaa atctttactt 240
cttatggcca aagacccagc tgtttcatag gctggagatg cactcttnta nactgctcga 300
gacanccaga gacaggggag gagggaagaa ggatactgtg gaaagggatg gcggggcaaa 360
cattttagag ctagaagcca ctactgggcc aatgctaaag nttctgtctc 410

<210> 295
<211> 516
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 323, 324, 442
<223> n = A,T,C or G

<400> 295
ggccgcgtcg acgtggtcgt tgtctttcta ggtctcagcc ggtcgtcgcg acgttcgccc 60
gctcgctctg aggctcctga agccgaaacc agctagactt tcctccttcc cgcctgcctg 120
tagcggcgtt gttgccactc cgccaccatg ttcgaggcgc gcctggtcca gggctccatc 180

ctcaagaagg tgttggaggc actcaaggac ctcatcaacg aggcctgctg ggatattagc 240
tccagcggtg taaacctgca gagcatggac tcgtcccacg tctctttggt gcagctcacc 300
ctgcggtctg agggcttcga canntaccgc tgcgaccgca acctggccat gggcgtgaac 360
ctcaccagta tgtccaaaat actaaaatgc gccggcaatg aagatatcat tacactaagg 420
gccgaagata acgcggatac cntggcgcta gtatttgaag caccaaacca ggagaaagtt 480
tcagactatg aaatgaagtt gatggattta gatgtt 516

<210> 296
<211> 559
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 528
<223> n = A,T,C or G

<400> 296
ggccgcgtcg acggtctaca agacgctact tcccctatca tagaagagct tatcaccttt 60
catgatcacg ccctcataat cattttcctt atctgcttcc tagtcctgta tgcccttttc 120
ctaacactca caacaaaact aactaatact aacatctcag acgctcagga aatagaaacc 180
gtctgaacta tcctgcccgc catcatccta gtcctcatcg ccctcccatc cctacgcatc 240
ctttacataa cagacgaggt caacgatccc tcccttacca tcaaatcaat tggccaccaa 300
tggtactgaa cctacgagta caccgactac ggcggactaa tcttcaactc ctacatactt 360
cccccattat tcctagaacc aggcgacctg cgactccttg acgttgacaa tcgagtagta 420
ctcccgattg aagcccccat tcgtataata attacatcac aagacgtctt gcactcatga 480
gctgtcccca cattaggctt aaaaacagat gcaattcccg gacgtctnaa ccaaaccact 540
ttcaccgcta cacgaccgg 559

<210> 297
<211> 467
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 109, 147, 150, 171, 211, 396
<223> n = A,T,C or G

<400> 297
ggccgccctt tttttttttt tttgatgcat tcaaatattt attgagcagc taaggagata 60
caaaggcgat ttaaaacatt gtcaggtgag gcaaatgcac aagtaatana aagcaaaggg 120
caaggttcac tgaatcacag cagtcanaan aaagtgcttt agggaaccaa nagattgttt 180
ccagcctgaa gaggcatggg tggcaaatca naaaagggga ttgagattaa aatagaagac 240
ttcagtctgg attgttgatg acactcagta tggactatat ttgtctctcc ttttcctttc 300
tccccatctt tgggcttaat ttacatgtag tgcccaggac tgttcaatgc gctttttcta 360
tacttgcttg catttttgct ttaatgtctt ctacanaact aggtcctttt ggtgttttag 420
gagtttttc ctgtttcttg aaggattctt gtccttttga tcttggt 467

<210> 298
<211> 374
<212> DNA
<213> Homo sapiens

<400> 298
ggccgcgtcg acgccgccgc gccgccatca tggacaccag ccgtgtgcag cctatcaagc 60
tggccagggt caccaaggtc ctgggcagga ccggttctca gggacagtgc acgcaggtgc 120
gcgtggaatt catggacgac acgagccgat ccatcatccg caatgtaaaa ggccccgtgc 180
gcgagggcga cgtgctcacc cttttggagt cagagcgaga agcccggagg ttgcgctgag 240
cttggctgct cgctgggtct tggatgtcgg gttcgaccac ttggccgatg ggaatggtct 300
gtcacaatct gctccttttt tttttgtccg ccacacgtaa ctgagatgct cctttaaata 360
aagcgtttgt gttt 374

<210> 299
<211> 391
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 124, 188, 329, 341, 352, 355
<223> n = A,T,C or G

<400> 299
ggccgccctt tttttttttt tttactgtga atatatactt tttatttagt catttttgtt 60
tacaattgaa actctgggaa ttcaaaatta acatccttgc ccgtgagctt cttatagaca 120
ccanaaaaag tttcaacctt gtgttccaca ttgttctgct gtgctttgtc caaatgaacc 180
tttatgancc ggctgccatc tagtttgacg cggattctct tgcccacaat ttcgcttggg 240
aagaccaagt cctcaaggat ggcatcgtgc acagctgtca gagtacggct cctgggacgc 300
ttttgcttat tttttgtacg gctttttcng agttggctta ngcagaattc tnctntgagc 360
gataaagacg acatgcttcc cactgaactt t 391

<210> 300
<211> 350
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 292, 328
<223> n = A,T,C or G

<400> 300
ggccgctgtt ttgaaatcgg gccgcggggg gtctctcaag ctggttccaa cgctgaggcc 60
ccacagcctc ccaattccgg gcagacccct gacacctgct gtctggcccc ttccggcctg 120
aagctgcagc cgcgccatgt ccacccctcc gttggccgcg tcggggatgg cgcccgggcc 180
cttcgccggg ccccaggctc agcaggccgc ccgggaagtc aacacggcgt cgctgtgccg 240
catcgggcag gagacagtgc aggacatcgt gtaccgcacc atggagatct tncagctcct 300
gaggaacatg cagctgccaa atggtgtnac ttaccacact ggaacatatg 350

<210> 301
<211> 413
<212> DNA
<213> Homo sapiens

<400> 301
ggccgcgtcg aggattcagc agcctccccc ttgagccccc tcgcttcccg acgttccgtt 60
ccccccctgcc cgccttctcc cgccaccgcc gccgccgcct tccgcaggcc gtttccaccg 120
aggaaaagga atcgtatcgt atgtccgcta tccagaacct ccactctttc gaccccttttg 180
ctgatgcaag taagggtgat gacctgcttc ctgctggcac tgaggattat atccatataa 240
gaattcaaca gagaaacggc aggaagaccc ttactactgt ccaagggatc gctgatgatt 300
acgataaaaa gaaactagtg aaggcgttta agaaaaagtt tgcctgcaat ggtactgtaa 360
ttgagcatcc ggaatatgga gaagtaattc agctacaggg tgaccaacgc aag 413

<210> 302
<211> 489
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 463
<223> n = A,T,C or G

<400> 302
ggccgcgtcg acgtccgaag tgaccgggca gggactctgc gtaggagcag ttcccaaaac 60
ccatcaggcc ctgtgtaata ccacccagaa ggcgagcgac gggtcctact atctggctgc 120
tcccgccggg accatctggg cttgcaacac cgggctcact ccctgcctat ctaccactgt 180
actcaacctc accaccgatt actgtgtcct ggttgagctc tggccaaagg tgacctacca 240
ctcccctggt tatgtttatg accagtttga gagaaaaacc aaatataaaa gagagccggt 300
gtcattaact ctggccctgc tgttggagga cttactatgg gcggcatagc tgcaggagta 360
ggaacaggga ctacagccct agtggccacc aaacaattcg agcagctcca ggcagccata 420
catacagacc ttggggcctt agaaaaatca gtcagtgccc tanaaaagtc tctgacctcg 480
ttgtctgag 489

<210> 303
<211> 537
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 536
<223> n = A,T,C or G

<400> 303
ggccgcgtcg acgtagtttt ctctgcgcgt gtgcgttttc cctcctcccc cgccctcagg 60
gtccacggcc accatggcgt attaggggca gcagtgcctg cggcagcatt ggcctttgca 120
gcggcggcag cagcaccagg ctctgcagcg gcaaccccca gcggcttaag ccatggcgct 180
tctcacggca ttcagcagca gcgttgctgt aaccgacaaa gacaccttcg aattaagcac 240
attcctcgat tccagcaaag caccgcaaca tgaccgaaat gagcttcctg agcagcgagg 300
tgttggtggg ggacttgatg tccccctteg acccgtcggg tttggggggct gaagaaagcc 360
taggtctctt agatgattac ctggaggtgg ccaagcactt caaacctcat gggttctcca 420
gcgacaaggc taaggcgggc tcctccgaat ggctggctgt ggatgggttg gtcagtccct 480
ccaacaacag caaggaggat gccttctccg ggacagattg gatgttggag aaaatng 537

<210> 304
<211> 566
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 215, 217
<223> n = A,T,C or G

<400> 304
ggccgcgtcg acgggaattt aatatttttc aatcaccaaa aattcatttg catgaatcat 60
ttgtggtata ccagaataag aaaatacaca tgatacagag ttatggaacc aatagatagt 120
catgatatag ttgatagaaa catcaagaca aagcaattat gtacagatag agacaagggt 180
tgaggaaaga gtaaaggtgc atagaaatct gtgcntntta aataaagtag ctatagaaaa 240
cagtataact gatcactagt aatagataac taacggccaa aaataatatc aactttaaat 300
tagataaatt ttattatttt taaagtaatc attttattta atctattgaa aactgataaa 360
ctattagatt atgaattttt ggtaaaacgt tagaagacaa ggttagagaa ataacctatc 420
atatggttgt atagtgtaat ttacatattt tagcataaat ataacattat tttaaagtat 480
atctagggtt atttttaatg ttttatactt ttatattctc tataaaataa cctatagtta 540
agaaaacata ccattctctc aaagca 566

<210> 305
<211> 589
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 242, 518, 574, 581

<223> n = A,T,C or G

<400> 305
ggccgccctt tttttttttt tttaggataa ttattttata attgttcttt tcattctaag 60
aacgttgtgt ttttcagaga aagacagctt tccagcaaaa attcatgcac aaaatacata 120
tacttgacaa gatgtttcag agcctactat gtcatttggc tagtctaaat ccactaatgt 180
taactatcaa cattttccca atactatttt taagttacat ctcatttacc ttcgtcctta 240
anaactgcat aagcttgttt taaatatttt aaatacttgt cataaactag agtttgctaa 300
gagtagaggt actctggtta atgatcaaaa tggtgtgccc agaggaaaag caagcactat 360
taaatattaa tgcaatcctt atcaacacaa attgagccat tttaataaaa aagctagtcc 420
aaaaaaggtt ctcattctat aaagattaaa tcatttccaa atcacagtga aaggaacttg 480
agtaattaac caattttgtt ttctactatg tgccttanag atacctcact aaaattttgt 540
atctgataca acagaataac atttgcagaa tgtnatattg nagtgacag 589

<210> 306
<211> 520
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 443, 509
<223> n = A,T,C or G

<400> 306
ggccgcgtcg acggcgacct ccgcgcgttg ggaggtgtag cgcggctctg aacgcgctga 60
gggccgttga gtgtcgcagg cggcgagggc gcgagtgagg agcagaccca ggcatcgcgc 120
gccgagaagg ccgggcgtcc ccacactgaa ggtccggaaa ggcgacttcc gggggctttg 180
gcacctggcg gaccctcccg gagcgtcggc acctgaacgc gaggcgctcc attgcgcgtg 240
cgcgttgagg ggcttcccgc acctgatcgc gagaccccaa cggctggtgg cgtcgcctgc 300
gcgtctcggc tgagctggcc atggcgcagc tgtgcgggct gaggcggagc cgggcgtttc 360
tcgccctgct gggatcgctg ctcctctctg gggtcctggc ggccgaccga gaacgcagca 420
tccacgactt ctgcctggtg tcnaaggtgg tgggcagatg ccgggcctcc atgcctaggt 480
ggtggtacaa tgtcactgac ggatcctgnc agctgtttgt 520

<210> 307
<211> 550
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 79
<223> n = A,T,C or G

<400> 307
ggccgcgtcg acgcttgtgg agatcggatc ttttctccag caattggggg aaagaaggct 60
ttttctctga attcgcttng tgtaaccagc ggcgtatatt ttttaggcgc cttttcgaaa 120
acctagtagt taatattcat ttgtttaaat cttattttat ttttaagctc aaactgctta 180
agaatacctt aattccttaa agtgaaataa ttttttgcaa aggggtttcc tcgatttgga 240
gctttttttt tcttccaccg tcatttctaa ctcttaaaac caactcagtt ccatcatggt 300
gatgttcaag aagatcaagt cttttgaggt ggtctttaac gaccctgaaa aggtgtacgg 360
cagtggcgag aaggtggctg gccgggtgat agtggaggtg tgtgaagtta ctcgtgtcaa 420
agccgttagg atcctggctt gcggagtggc taaagtgctt tggatgcagg gatcccagca 480
gtgcaaacag acttcggagt acctgcgcta tgaagacacg cttcttctgg aagaccagcc 540
cacaggtgag 550

<210> 308
<211> 542
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 523, 525
<223> n = A,T,C or G

<400> 308
ggccgcgtcg acctgaccag caccatggcg gttggcaaga acaagcgcct tacgaaaggc 60
ggcaaaaagg gagccaagaa gaaagtggtt gatccatttt ctaagaaaga ttggtatgat 120
gtgaaagcac ctgctatgtt caatataaga aatattggaa agacgctcgt caccaggacc 180
caaggaacca aaattgcatc tgatggtctc aagggtcgtg tgtttgaagt gagtcttgct 240
gatttgcaga atgatgaagt tgcatttaga aaattcaagc tgattactga agatgttcag 300
ggtaaaaact gcctgactaa cttccatggc atggatctta cccgtgacaa aatgtgttcc 360
atggtcaaaa aatggcagac aatgattgaa gctcacgttg atgtcaagac taccgatggt 420
tacttgcttc gtctgttctg tgttggtttt actaaaaaac gcaacaatca gatacggaag 480
acctcttatg ctcagcacca acaggtccgc caaatccgga agnangatga tggaaatcat 540
ga 542

<210> 309
<211> 163
<212> DNA
<213> Homo sapiens

<400> 309
gaggccagag ccccagccag ggtagccatc aggagtagca gggtacacag aggccgggcc 60
atggtctcct cagaggcaga gcacaaagct ggagctgcag gagaggaggg tgagagcccg 120
cccaacacaa tggaattcca gcacactggc ggccgttact agt 163

<210> 310
<211> 564
<212> DNA
<213> Homo sapiens

<400> 310
ggccgcgtcg actcgcggtg cgacgaagga gtaggtggtg ggatctcacc gtgggtccga 60
ttagcctttt ctctgccttg cttgcttgag cttcagcgga attcgaaatg gctggcggta 120
aggctggaaa ggactccgga aaggccaaga caaaggcggt ttcccgctcg cagagagccg 180
gcttgcagtt cccagtgggc cgtattcatc gacacctaaa atctaggacg accagtcatg 240
gacgtgtggg cgcgactgcc gctgtgtaca gcgcagccat cctggagtac ctcaccgcag 300
aggtacttga actggcagga aatgcatcaa aagacttaaa ggtaaagcgt attacccctc 360
gtcacttgca acttgctatt cgtggagatg aagaattgga ttctctcatc aaggctacaa 420
ttgctggtgg tggtgtcatt ccacacatcc acaaatctct gattgggaag aaaggacaac 480
agaagactgt ctaaaggatg cctggattcc ttgttatctc aggactctaa atactctaac 540
agctgtccag tgttggtgat tcca 564

<210> 311
<211> 565
<212> DNA
<213> Homo sapiens

<400> 311
ggccgcgtcg accagggcgg cgcgtggtct acgccgagtg acagagacgc tcaggctgtg 60
ttctcaggat gaccgagtgg gagacagcag caccagcggt ggcagagacc ccagacatca 120
agctctttgg gaagtggagc accgatgatg tgcagatcaa tgacatttcc ctgcaggatt 180
acattgcagt gaaggagaag tatgccaagt acctgcctca cagtgcaggg cggtatgccg 240
ccaaacgctt ccgcaaagct cagtgtccca ttgtggagcg cctcactaac tccatgatga 300
tgcacggccg caacaacggc aagaagctca tgactgtgcg catcgtcaag catgccttcg 360
agatcataca cctgctcaca ggcgagaacc ctctgcaggt cctggtgaac gccatcatca 420
acagtggtcc ccggggagga ctccacacgc attgggcgcg ccgggactgt gagacgacag 480
gctgtggatg tgtcccccct gcgccgtgtg aaccaggcca tctggctgct gtgcacaggc 540
gctcgtgagg ctgccttccg gaaca 565

<210> 312

<211> 139
<212> DNA
<213> Homo sapiens

<400> 312
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgagggggc 139

<210> 313
<211> 154
<212> DNA
<213> Homo sapiens

<400> 313
gatcctccct tctgcctttg ctatcagttc cctctactca ccagcaggtc agtggtaatc 60
aaaactctgc tagagccaga acgaaactcc ctcataatca cgtctcgttc cttttggtcc 120
atatctccat gcatggcgga tacagtgaaa tctc 154

<210> 314
<211> 529
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 299, 352, 474
<223> n = A,T,C or G

<400> 314
ggccgccctt tttttttttt tttagtagag atggggtttc accatgttgg ccaggctggt 60
ctcaaactcc taacctcaag tgatccgtcc gccttggcct cccaaagtgc tgggattaca 120
ggcgcgagcc actgtgccca gcctacaatc atgatttcta attccaaaaa tcagactttc 180
taattctcag gtagatggcc aaagctgatt ttcaagtttt gtgtcttttt aaacagaaga 240
aaatgaacct tattaaagct gaatgactca ttcaaggcca tatagctggt aggtggcana 300
agtggggttt gaacccgttt ttcttctata ccacacacca attactgtat anaaaaatag 360
ctgaattgct cctattagcc aaatttcatt tttaaaaccc cacatgtggt ttattattct 420
gttatggcaa tgtctatgtt gcatattaat aaaaaagaaa atccttgtgt ttanaaaaca 480
gtgttatcac agataacaat aagctattct tgttcctggt tccaatgat 529

<210> 315
<211> 259
<212> DNA
<213> Homo sapiens

<400> 315
ggctccccag caggcagaag tatgcaaagc atgcatctca attagtcagc aaccatagtc 60
ccgcccctaa ctccgcccat cccgccccta actccgccca gttccgccca ttctccgccc 120
catggctgac taattttttt tatttatgca gaggccgagg ccgcctctgc ctctgagcta 180
ttccagaagt agtgaggagg cttttttgga ggcctaggct tttgcaaaaa gctcccggga 240
gcttgtatat ccattttcg 259

<210> 316
<211> 556
<212> DNA
<213> Homo sapiens

<400> 316
ggccgcgtcg acgtgggatc tcaccgtggg tccgattagc cttttctctg ccttgcttgc 60
ttgagcttca gcggaattcg aaatggctgg cggtaaggct ggaaaggact ccggaaaggc 120
caagacaaag gcggtttccc gctcgcagag agccggcttg cagttcccag tgggccgtat 180
tcatcgacac ctaaaatcta ggacgaccag tcatggacgt gtgggcgcga ctgccgctgt 240

gtacagcgca gccatcctgg agtacctcac cgcagaggta cttgaactgg caggaaatgc 300
atcaaaagac ttaaaggtaa agcgtattac ccctcgtcac ttgcaacttg ctattcgtgg 360
agatgaagaa ttggattctc tcatcaaggc tacaattgct ggtggtggtg tcattccaca 420
catccacaaa tctctgattg ggaagaaagg acaacagaag actgtctaaa ggatgcctgg 480
attccttgtt atctcaggac tctaaatact ctaacagctg tccagtgttg gtgattccag 540
tggactgtat ctctgt 556

<210> 317
<211> 503
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 175, 188, 348, 359
<223> n = A,T,C or G

<400> 317
ggccgccctt tttttttttt tttgtcctaa attgtttatt aagtatgaat tttacaaact 60
ttacttatat tagcggtaac ggtggagctg gagagtattg cgccttctcc aagctgcccg 120
gcgagagcca ccaatagtgt ggtggaactt gtggcccttt ccaaggccac ggctntttcg 180
gcctgcanat gtcagcccac gcatctccct gtgcttgtgg actggtttgg tgatccactg 240
ggtgtcagga tttcttctga tagctttatg gaatggatca atgaggataa cctcaaaaaa 300
tttgtatgtg gaatcttcac caacccagta agaattcagg actctcanag ccccacagng 360
gcgtccagct cgctcctctg caacggactg aaggcttcga gcaaacttta gctggttaac 420
accatgatgg acaggcttgc cgtaagttgc acccttagga actgggcgtt ttcggccacc 480
acggcgaaca cgaatcctat ata 503

<210> 318
<211> 365
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 275, 308, 309, 321, 322, 348, 352, 353
<223> n = A,T,C or G

<400> 318
ggccgcgtcg acgcccggtg ccaagcgcag ctagctcagc aggcggcagc ggcggcctga 60
gcttcagggc agccagctcc ctcccggtct cgccttccct cgcggtcagc atgaaagcct 120
tcagtcccgt gaggtccgtt aggaaaaaca gcctgtcgga ccacagcctg ggcatctccc 180
ggagcaaaac ccctgtggac gacccgatga gcctgctata caacatgaac gactgctact 240
ccaagctcaa ggagctggtg cccagcatcc cccanaacaa gaaggtgagc aagatggaaa 300
tcctgcanna cgtcatcgac nncatcttgg acctgcagat cgccctgnac tnncatccca 360
ctatt 365

<210> 319
<211> 77
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 57, 64
<223> n = A,T,C or G

<400> 319
ggccgccctt tttttttttt tttttttttt tttttttttt tttcagggga aaataanttt 60
tatngaaacc ccaccaa 77

<210> 320

<211> 478
<212> DNA
<213> Homo sapiens

<400> 320
ggccgcgtcg accaaaacac caaatggcgg atgacgccgg tgcagcgggg gggcccgggg 60
gccctggtgg ccctgggatg gggaaccgcg gtggcttccg cggaggtttc ggcagtggca 120
tccgggggcg gggtcgcggc cgtggacggg gccgggggcg aggccgcgga gctcgcggag 180
gcaaggccga ggataaggag tggatgcccg tcaccaagtt gggccgcttg gtcaaggaca 240
tgaagatcaa gtccctggag gagatctatc tcttctccct gcccattaag gaatcagaga 300
tcattgattt cttcctgggg gcctctctca aggatgaggt tttgaagatt atgccagtgc 360
agaagcagac ccgtgccggc cagcgcacca ggttcaaggc atttgttgct atcggggact 420
acaatggcca cgtcggtctg ggtgttaagt gctccaagga ggtggccacc gccatccg 478

<210> 321
<211> 532
<212> DNA
<213> Homo sapiens

<400> 321
ggccgcgtcg acgttgtggt gctagtttct ctaagccatc cagtgccatc ctcgtcgctg 60
cagcgacaca cgctctcgcc gccgccatga ctgagcagat gacccttcgt ggcaccctca 120
agggccacaa cggctgggta acccagatcg ctactacccc gcagttcccg gacatgatcc 180
tctccgcctc tcgagataag accatcatca tgtggaaact gaccagggat gagaccaact 240
atggaattcc acagcgtgct ctgcggggtc actcccactt tgttagtgat gtggttatct 300
cctcagatgg ccagtttgcc ctctcaggct cctgggatgg aaccctgcgc ctctgggatc 360
tcacaacggg caccaccacg aggcgatttg tgggccatac caaggatgtg ctgagtgtgg 420
ccttctcctc tgacaaccgg cagattgtct ctggatctcg agataaaacc atcaagctat 480
ggaataccct gggtgtgtgc aaatacactg tccaggatga gagccactca ga 532

<210> 322
<211> 484
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 391, 456, 479
<223> n = A,T,C or G

<400> 322
ggccgcgtcg actggtgctt gatggtcgag gccatctcct gggccgcctg gcggccatcg 60
tggctaaaca ggtactgctg ggccggaagg tggtggtcgt acgctgtgaa ggcatcaaca 120
tttctggcaa tttctacaga aacaagttga agtacctggc tttcctccgc aagcggatga 180
acaccaaccc ttcccgaggc ccctaccact tccgggcccc cagccgcatc ttctggcgga 240
ccgtgcgagg tatgctgccc cacaaaacca agcgaggcca ggccgctctg gaccgtctca 300
aggtgtttga cggcatccca ccgccctacg acaagaaaaa gcggatggtg gttcctgctg 360
ccctcaaggt cgtgcgtctg aagcctacaa naaagtttgc ctatctgggg cgcctggctc 420
acgaggttgg ctggaagtac caggcagtga cagccncccct ggaggagaag aggaaagana 480
aagc 484

<210> 323
<211> 474
<212> DNA
<213> Homo sapiens

<400> 323
ggccgcgtcg acgcagcctg ctgcctcccc tccatcagcc acagctattg gatttcccac 60
ccagaatctt taggtaaatg agatcatgat tctggaagga ggtggtgtaa tgaatctcaa 120
ccccggcaac aacctccttc accagccgcc agcctggaca gacagctact ccacgtgcaa 180
tgtttccagt gggttttttg gaggccagtg gcatgaaatt catcctcagt actggaccaa 240
gtaccaggtg tgggagtggc tccagcacct cctggacacc aaccagctgg atgccaattg 300

tatccctttc caagagttcg acatcaacgg cgagcacctt tgcagcatga gtttgcagga 360
gttcacccgg gcggcaggga cggcggggca gctcctctac agcaacttgc agcatctgaa 420
gtggaacggc cagtgcagta gtgacctgtt ccagtccaca cacaatgtca ttgt 474

<210> 324
<211> 542
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 443, 464, 472, 541
<223> n = A,T,C or G

<400> 324
ggccgcgtcg acggaagtga catcgtcttt aaaccctgcg tggcaatccc tgacgcaccg 60
ccgtgatgcc cagggaagac agggcgacct ggaagtccaa ctacttcctt aagatcatcc 120
aactattgga tgattatccg aaatgtttca ttgtgggagc agacaatgtg ggctccaagc 180
agatgcagca gatccgcatg tcccttcgcg ggaaggctgt ggtgctgatg ggcaagaaca 240
ccatgatgcg caaggccatc cgagggcacc tggaaaacaa cccagctctg gagaaactgc 300
tgcctcatat ccgggggaat gtgggctttg tgttcaccaa ggaggacctc actgagatca 360
gggacatgtt gctggccaat aaggtgccag ctgctgcccg tgctggtgcc attgccccat 420
gtgaagtcac tgtgccagcc canaacactg gtctcgggcc cganaagacc tncttttccc 480
aggctttagg tatcaccact aaaatctcca ggggcaccat tgaaatcctg agtgatgtgc 540
ng 542

<210> 325
<211> 466
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 370, 371, 457
<223> n = A,T,C or G

<400> 325
ggccgcgtcg accgcgcggt gtggtggcag caggcgcagc ccagcctcga aatgcagaac 60
gacgccggcg agttcgtgga cctgtacgtg ccgcggaaat gctccgctag caatcgcatc 120
atcggtgcca aggaccacgc atccatccag atgaacgtgg ccgaggttga caaggtcaca 180
ggcaggttta atggccagtt taaaacttat gctatctgcg gggccattcg taggatgggt 240
gagtcagatg attccattct ccgattggcc aaggccgatg gcatcgtctc aaagaacttt 300
tgactggaga gaatcacaga tgtggaatat ttgtcataaa taaataatga aaacctaaaa 360
aaaaaaaaan ntaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 420
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaanaaa aaaaaa 466

<210> 326
<211> 227
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 209
<223> n = A,T,C or G

<400> 326
ggccgcgtcg acgcagccat gtctctagtg atccctgaaa agttccagca tattttgcga 60
gtactcaaca ccaacatcga tgggcggcgg aaaatagcct ttgccatcac tgccattaag 120
ggtgtgggcc gaagatatgc tcatgtggtg ttgaggaaag cagacattga cctcaccaag 180
agggcgggag aactcactga ggatgaggng gaacgtgtga tcaccat 227

<210> 327
<211> 566
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 539
<223> n = A,T,C or G

<400> 327
ggccgcgtcg acgtggtgct agtttctcta agccatccag tgccatcctc gtcgctgcag 60
cgacacacgc tctcgccgcc gccatgactg agcagatgac ccttcgtggc accctcaagg 120
gccacaacgg ctgggtaacc cagatcgcta ctaccccgca gttcccggac atgatcctct 180
ccgcctctcg agataagacc atcatcatgt ggaaactgac cagggatgag accaactatg 240
gaattccaca gcgtgctctg cggggtcact cccactttgt tagtgatgtg gttatctcct 300
cagatggcca gtttgccctc tcaggctcct gggatggaac cctgcgcctc tgggatctca 360
caacgggcac caccacgagg cgatttgtgg gccataccaa ggatgtgctg agtgtggcct 420
tctcctctga caaccggcag attgtctctg gatctcgaga taaaaccatc aagctatgga 480
ataccctggg tgtgtgcaaa tacactgtcc aggatgagag ccactcagag tgggtgtcnt 540
tgtgtccgct tctcgcccaa cagcag 566

<210> 328
<211> 167
<212> DNA
<213> Homo sapiens

<400> 328
ggccgcgtcg acctctttgg aaaatagttt gcaacatatt taagagatac ttgatgccaa 60
aatgacttta tacaacgatt gtatttgtga cttttaaaaa taattatttt attgtgtaat 120
tgatttataa ataacaaaat ttttttttaaa aaaaaaaaa aaagggc 167

<210> 329
<211> 551
<212> DNA
<213> Homo sapiens

<400> 329
ggccgcgtcg acctcaggtg gtccacccga gaccccttga gcaccaaccc tagtcccccg 60
cgcggcccct tattcgctcc gacaagatga aagaaacaat catgaaccag gaaaaactcg 120
ccaaactgca ggcacaagtg cgcattggtg ggaaaggaac tgctcgcaga aagaagaagg 180
tggttcatag aacagccaca gcagatgaca aaaaacttca gttctcctta aagaagttag 240
gggtaaacaa tatctctggt attgaagagg tgaatatgtt tacaaaccaa ggaacagtga 300
tccactttaa caaccctaaa gttcaggcat ctctggcagc gaacactttc accattacag 360
gccatgctga gacaaagcag ctgacagaaa tgctacccag catcttaaac cagcttggtg 420
cggatagtct gactagttta aggagactgg ccgaagctct gcccaaacaa tctgtggatg 480
gaaaagcacc acttgctact ggagaggatg atgatgatga agttccagat cttgtggaga 540
atttgatga g 551

<210> 330
<211> 365
<212> DNA
<213> Homo sapiens

<400> 330
ggccgcgtcg acggccgcag aagcgagatg acgaagggaa cgtcatcgtt tggaaagcgt 60
cgcaataaga cgcacacgtt gtgccgccgc tgtggctcta aggcctacca ccttcagaag 120
tcgacctgtg gcaaatgtgg ctaccctgcc aagcgcaaga gaaagtataa ctggagtgcc 180
aaggctaaaa gacgaaatac caccggaact ggtcgaatga ggcacctaaa aattgtatac 240
cgcagattca ggcatggatt ccgtgaagga acaacaccta aacccaagag ggcagctgtt 300
gcagcatcca gttcatctta agaatgtcaa cgattagtca tgcaataaat gttctggttt 360
taaaa 365

<210> 331
<211> 464
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 397
<223> n = A,T,C or G

<400> 331
ggccgccttt tttttttttt tttgtcagca aaaatctttt taataagaga gtaggatcca 60
gggttagttt ttgtagcctc ggctggcccg tcggcctctg gcacgctcga acttccggcc 120
cttggagcgg acgtagggtt tggtgtggct gtgcggggtt cctggggcct tgccgaaatg 180
ccggtacacc tctcggccct tgcgaggacc ggagagcagg acagtgccac agcccttagg 240
ggagtccagg gccagctggt cgaaagtgag gatcttgccc cctgccctga ggatgcggct 300
gcgggcccgg ctggtcacgc gcagtgcaca taccttcagt ttgggtacct cctgaacccg 360
cacatcatca gttatggtcc ccacaaccac ggccgtnttg ttttcccggc caggaagctt 420
catcttccgg atcatccggg aaagggacag aggcggccgg ttgg 464

<210> 332
<211> 567
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 532, 535
<223> n = A,T,C or G

<400> 332
ggccgcgtcg acgcgacggt agctctagcc gggcctgagc tgtgctagca cctccccccag 60
gagaccgttg cagtcggcca gcccccttct ccacggtaac catgtgcgac cgaaaggccg 120
tgatcaaaaa tgcggacatg tcggaagaga tgcaacagga ctcggtggag tgcgctactc 180
aggcgctgga gaaatacaac atagagaagg acattgcggc tcatatcaag aaggaatttg 240
acaagaagta caatcccacc tggcattgca tcgtggggag gaacttcggt agttatgtga 300
cacatgaaac caaacacttc atctacttct acctgggcca agtggccatt cttctgttca 360
aatctggtta aaagcatgga ctgtgccaca cacccagtga tccatccaaa aacaaggact 420
gcagcctaaa ttccaaatac cagagactga aattttcagc cttgctaagg gaacatctcg 480
atgtttgaac ctttgttgtg ttttgtacag ggcattctct gtactagttt gncgnggtta 540
taaaacaatt agcagaatag cctacat 567

<210> 333
<211> 503
<212> DNA
<213> Homo sapiens

<400> 333
ggccgccctt tttttttttt tttctcttgt ttttaagttt tatataaatg gttagcagag 60
caccaaatga ctgcaattct atgatccatt aaggtcatgt atacatacat gtttgtatat 120
gaatatatat acaatatgta taggaccata tatatttact tgtttttgtc tgtttatttt 180
cctaatagta agggccaggg ccaggacttt agatgacagt cgtgtgattg caccagggta 240
tataatgcat ggatacacat ggagacaagt cctggcacct ggtgctccag aggtcagcca 300
tggcttatta tgccttcgtt taccctagca catgccagga taaacgtaga ggaagaacag 360
atcctccctg acctggtatg tgatccaggg agactctact caaaggttta gcattcgatg 420
aaggagcctc ccataaaatc caaaagtggt ggcagcagtg gctccttatg caatagccca 480
aaaatactcc tattaactct ctg 503

<210> 334
<211> 546
<212> DNA

<213> Homo sapiens

<400> 334
ggccgcgtcg acgttcattt cccagggtct tggaaaggat gcacactgat catctcaata 60
agacaggggc tgggttgggg gcagcagagg aggccaagca cattcacctg cacccctagt 120
acctgggcag cccatactcc aatgtggtat gtcccctcct ggggctccca gctcaaaccc 180
tcccatgcct gcttcccca ggcctaactg aggaagtcct tcttgaagtg tgacctcggt 240
ccacttctct acagattgat ttaagagcct gggaagtcat tccacaaaca gacacacatg 300
cacacacgct tctcaccttc agagcttcaa gagcactgag gcgatcagtc ccctacccct 360
gttcccatcc agctttccac ttagctttga cctccatggc agcagtagca gtaacaatct 420
cagtaattgt tctttaaagc tgactcgttc ttcacctact tgcaaagtgc tttcttgtct 480
cataaaagtt agattccaag aaggacttcc cacggagtgg agtggaaaca ctgtccttga 540
aggcct 546

<210> 335
<211> 139
<212> DNA
<213> Homo sapiens

<400> 335
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgaggggc 139

<210> 336
<211> 477
<212> DNA
<213> Homo sapiens

<400> 336
ggccgcgtcg acgccgagca ggaggcgcca tcatgggagt ggacatccgc cataacaagg 60
accgaaaggt tcggcgcaag gagcccaaga gccaggatat ctacctgagg ctgttggtca 120
agttatacag gtttctggcc agaagaacca actccacatt caaccaggtt gtgttgaaga 180
ggttgtttat gagtcgcacc aaccggccgc ctctgtccct ttcccggatg atccggaaga 240
tgaagcttcc tggccgggaa aacaagacgg ccgtggttgt ggggaccata actgatgatg 300
tgcgggttca ggaggtaccc aaactgaagg tatgtgcact gcgcgtgacc agccgggccc 360
gcagccgcat cctcagggca gggggcaaga tcctcacttt cgaccagctg gccctggact 420
cccctaaggg ctgtggcact gtcctgctct ccggtcctcg caagggccga gaggtgt 477

<210> 337
<211> 582
<212> DNA
<213> Homo sapiens

<400> 337
ggccgcgtcg acccgggctt agaaggcccg gctactgacg cgcagtgcca gaccttagcc 60
ctcacggtcc ttaagtctcg gtcgccctcg cctcgcagcc tgccacccgc gctcagctgc 120
ccgcctcctc agccagccat gctggagcat ctgagctcgc tgcccacgca gatggattac 180
aagggccaga agctagctga acagatgttt cagggaatta ttctttttttc tgcaatagtt 240
ggatttatct acgggtacgt ggctgaacag ttcgggtgga ctgtctatat agttatggcc 300
ggatttgctt tttcatgttt gctgacactt cctccatggc ccatctatcg ccggcatcct 360
ctcaagtggt tacctgttca agaatcaagc acagacgaca agaaaccagg ggaaagaaaa 420
attaagaggc atgctaaaaa taattgaggt tttcatgatt cagcacctgc ttttgtttct 480
gtgagatgag ctaaattgct ttcatacccc agataagagc taaaaccacc taatgctctt 540
atggcacagc tgtgtataga tttagttctc tttatacttc at 582

<210> 338
<211> 510
<212> DNA
<213> Homo sapiens

<400> 338

ggccgcgtcg acgcgggcgg ccggctaggg tggaagagcc gggcgagcag agctgcgctg 60
cgggcgtcct gggaagggag atccggagcg aatagggggc ttcgcctctg gcccagccct 120
cccgctgatc ccccagccag cggtccgcaa cccttgccgc atccacgaaa ctttgcccat 180
agcagcgggc gggcactttg cactggaact tacaacaccc gagcaaggac gcgactctcc 240
cgacgcgggg aggctattct gcccatttgg ggacacttcc ccgccgctgc caggacccgc 300
ttctctgaaa ggctctcctt gcagctgctt agacgctgga tttttttcgg gtagtggaaa 360
accagcagcc tcccgcgacg atgcccctca acgttagctt caccaacagg aactatgacc 420
tcgactacga ctcggtgcag ccgtatttct actgcgacga ggaggagaac ttctaccagc 480
agcagcagca gagcgagctg cagccccggc 510

<210> 339
<211> 609
<212> DNA
<213> Homo sapiens

<400> 339
ggccgcgtcg acgcttttct ctctctcttt cactgcaagg cggcggcagg agaggttgtg 60
gtgctagttt ctctaagcca tccagtgcca tcctcgtcgc tgcagcgaca cacgctctcg 120
ccgccgccat gactgagcag atgacccttc gtggcaccct caagggccac aacggctggg 180
taacccagat cgctactacc ccgcagttcc cggacatgat cctctccgcc tctcgagata 240
agaccatcat catgtggaaa ctgaccaggg atgagaccaa ctatggaatt ccacagcgtg 300
ctctgcgggg tcactcccac tttgttagtg atgtggttat ctcctcagat ggccagtttg 360
ccctctcagg ctcctgggat ggaaccctgc gcctctggga tctcacaacg ggcaccacca 420
cgaggcgatt tgtgggccat accaaggatg tgctgagtgt ggccttctcc tctgacaacc 480
ggcagattgt ctctggatct cgagataaaa ccatcaagct atggaatacc ctgggtgtgt 540
gcaaatacac tgtccaggat gagagccact cagagtgggt gtcttgtgtc cgcttctccc 600
caacagcag 609

<210> 340
<211> 329
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 254
<223> n = A,T,C or G

<400> 340
ggccgcgtcg actttttttt tttttttttt cggatgcaaa cagcaaaagg ctttattggg 60
aacacgggta cccgggcgac tcagtctatc ggatgactgg cgcgccgagt gtggggtttt 120
taccctttt atagggctgg ggagcaaaaa gcgcggttac agaagcgaga agcgagctga 180
ttggttagtt taaataaggc ttggggtttt tcccggtctt ttggggaact tgaaactgag 240
gtgggacttt ccanaaactg ttgctagttt cgctttatct gagtaccatc tgttcttggc 300
cctgagccgg ggcccaggtg ctcgaccac 329

<210> 341
<211> 434
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 247, 349, 355, 386, 396
<223> n = A,T,C or G

<400> 341
ggccgccctt tttttttttt tttcggatgc aaacagcaaa aggctttatt gggaacacgg 60
gtacccgggc gactcagtct atcggatgac tggcgcaccg agtgtggggt ttttaccctt 120
tttatagggc tggggagcaa aaagcgcggt tacagaagcg agaagcgagc tgattggtta 180
gtttaaataa ggcttggggt ttttcccggt cttttgggga acttgaaact gaggtgggac 240
tttccanaaa ctgttgctag tttcgcttta tctgagtacc atctgttctt ggccctgagc 300

cggggcccag gtgctcgacc acagatatcc tgtttggccc ctgtcccant tttgntcagc 360
cttattcttt aactaaactt ccttgngact tttganaact cagctctggt actttttcat 420
gccttgcaaa atgg 434

<210> 342
<211> 458
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 28, 35, 115, 194, 227, 231, 306, 336
<223> n = A,T,C or G

<400> 342
ggccgccctt tttttttttt tttttttnat tctgnatttt attactgaaa tatgttgtcc 60
tactcatccc accccacaat aaaaatctga cccaggcccc ccatttcttt ccctnatccc 120
ctcttccacc acaccatccc ggaacaagtg ctccaggatt ccctgcccac tggccatttt 180
ggagtgtgtc catngggtag caatgtggaa accaccaggg cctttgngga naaaatggag 240
ggggttgagg gagtcccagg aggggcttat ttgagggcct ttgccacttg ctcataggcg 300
agctcnatct cctcatcatc tggacaggtg gaagcnaatt cttcccgggc gtaggcattg 360
ctcaagtacc gatgcactcc ccggaaggcc tcggggatgg tgaatccccg gtacttctta 420
cacaccacct gtactatgtg taactttggc aacaggtt 458

<210> 343
<211> 72
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 57, 58, 67
<223> n = A,T,C or G

<400> 343
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt ttggggnncc 60
aaatttnttt at 72

<210> 344
<211> 637
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 618
<223> n = A,T,C or G

<400> 344
ggccgcgtcg accggcatta aacggttgca ggcgtagcag agtggtcgtt gtctttctag 60
gtctcagccg gtcgtcgcga cgttcgcccg ctcgctctga ggctcctgaa gccgaaacca 120
gctagacttt cctccttccc gcctgcctgt agcggcgttg ttgccactcc gccaccatgt 180
tcgaggcgcg cctggtccag ggctccatcc tcaagaaggt gttggaggca ctcaaggacc 240
tcatcaacga ggcctgctgg gatattagct ccagcggtgt aaacctgcag agcatggact 300
cgtcccacgt ctctttggtg cagctcaccc tgcggtctga gggcttcgac acctaccgct 360
gcgaccgcaa cctggccatg ggcgtgaacc tcaccagtat gtccaaaata ctaaaatgcg 420
ccggcaatga agatatcatt acactaaggg ccgaagataa cgcggatacc ttggcgctag 480
tattttgaag caccaaacca ggagaaagtt tcagactatg aaatgaagtt gatggattta 540
gatgttgaac aacttggaat tccagaacag gagtacagct gtgtagtaaa gatgccttct 600
ggtgaatttg cacgtatntg ccgagatctc agccata 637

<210> 345

<211> 616
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 555, 572
<223> n = A,T,C or G

<400> 345
ggccgcgtcg accgcagcca tggctcgtgg tcccaagaag catctgaagc gggtggcagc 60
tccaaagcat tggatgctgg ataaattgac cggtgtgttt gctcctcgtc catccaccgg 120
tccccacaag ttgagagagt gtctccccct catcattttc ctgaggaaca gacttaagta 180
tgccctgaca ggagatgaag taaagaagat ttgcatgcag cggttcatta aaatcgatgg 240
caaggtccga actgatataa cctaccctgc tggattcatg gatgtcatca gcattgacaa 300
gacgggagag aatttccgtc tgatctatga caccaagggt cgctttgctg tacatcgtat 360
tacacctgag gaggccaagt acaagttgtg caaagtgaga aagatctttg tgggcacaaa 420
aggaatccct catctggtga ctcatgatgc ccgcaccatc cgctaccccg atcccctcat 480
caaggtgaat gataccattc agattgattt ggagactggc aagattactg atttcatcaa 540
gttcgacact ggtancctgt gtatggtgac tngaggtgct aacctaggaa gaattggtgt 600
gatcaccaac agagag 616

<210> 346
<211> 521
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 35, 365
<223> n = A,T,C or G

<400> 346
ggccgccctt tttttttttt ttttactagg caaanaactt tattaatctt tgtttcaaac 60
ttgattccca ggcttcttcg gcttaattag ctgcaaagaa tgaattgtgt ataagcaaaa 120
actgaaaaga gctgcagtgt ccaaggggct tgggcttaaa aatattagag atctagattt 180
tatcagatcc ataaacaaaa atttcttaaa aagcagtcat aatataaaat agcagctccc 240
agtaacttct tcaggtttta tcttcagaag ttgactcaat tcagtttgcc tcattcttgg 300
aagcctcatc aaaattctcc acaagatctg gaacttcatc atcatcatcc tctccagtag 360
caagnggtgc ttttccatcc acagattgtt tgggcagagc ttcggccagt ctccttaaac 420
tagtcagact atccgcacca agctggttta agatgctggg tagcatttct gtcagctgct 480
ttgtctcaac atggcctgta atggtgaaag tgttcgctgc c 521

<210> 347
<211> 567
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 493
<223> n = A,T,C or G

<400> 347
ggccgcgtcg acctgtatgt ggagcagtgt acagtgaagc ggaggcagag cggctccgcg 60
agcttctctc cactttccca tagagaaacc ctgactggcc gctgagggct agctacacac 120
acgccctcac gcccggcgag cccgcgaggt cactatcata tgacaaaggc tttgccgcag 180
ttcatcttcc tccctgtgta ctttccattt gccttcctgg aatcctgctg catcacagaa 240
gctggaagtt ctgatgttcc actgaaatca caatggaaag tcttgacttg actggtcaca 300
gtaatgaaag gcagtaatag aaataaggat cattcagcag aaggagaagg ggttggaaaa 360
cgaccaaaac gaaagtgtct tcagtggcat ccattgctag caaagaaact tcttgatttt 420
tcagaagagg aagaagagga agacgaagag gaggatattg ataaggttca acttcttggg 480

gccgatggcc tanagcaaga tgttggtgaa actgaagatg atgaatcacc agagcagcga 540
gcccggagac caatgaatgc atttctt 567

<210> 348
<211> 452
<212> DNA
<213> Homo sapiens

<400> 348
ggccgcgtcg accgcgagtg ggagcaccag gatctcgggc tcggaacgag actgcacgga 60
ttgttttaag aaaatggcag acaaaccaga catgggggaa atcgccagct tcgataaggc 120
caagctgaag aaaacggaga cgcaggagaa gaacaccctg ccgaccaaag agaccattga 180
gcaggagaag cggagtgaaa tttcctaaga tcctggagga tttcctaccc ccgtcctctt 240
cgagacccca gtcgtgatgt ggaggaagag ccacctgcaa gatggacacg agccacaagc 300
tgcactgtga acctgggcac tccgcgccga tgccaccggc ctgtgggtct ctgaagggac 360
cccccccaa tcggactgcc aaattctccg gtttgccccg ggatattata gaaaattatt 420
tgtatgaata atgaaaataa aacacacctc gt 452

<210> 349
<211> 603
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 550
<223> n = A,T,C or G

<400> 349
ggccgcgtcg acaaacgaaa gcacaccacc caagacacag tacccagtca tggtttcccc 60
atccaactat tagattcata ctttgaaaac ttactttcag attattctca aagaacacag 120
tagcacctaa atctgttttc aattgggctt aaaaattgac atgcaatctc ttaagttttt 180
tgttcagcta cttcacactg agtacctcaa atctgctctg gagtcgatta tgccacctgt 240
gtgtcaggat gcacatgaaa gccctcggct cggtccttag accatcttcc tacattacct 300
ggaagggagc tgccatctgt ccctctgcag agggatacct tccaatagta aattatctgg 360
ttcctcactg aaacaagtta tttttgcttc atatagtcag agtcagactg acatgataaa 420
atatcatgtt cctaatctgt tgtctcagat aagtgaccaa gacgggactt tccacatttt 480
agtctacatt ctaatcttaa aggaataaag cactgaattg ggactaacat tctgataggt 540
tgcacccttn agagtattca gagagcatca aaaggagccc acaccttcag cagtgaagga 600
ttc 603

<210> 350
<211> 519
<212> DNA
<213> Homo sapiens

<400> 350
ggccgcgtcg accttgttga gcaatgactt tgaatctagt tttcagtgat cagaagcagc 60
agttatttga gtgtatgaat ggaatgatga tcactgtgct ataatgtact gaaaccacca 120
tattacagaa atatttacta catattttcc atctgtagtt tctcagaagg gctatggatt 180
agtttgaact gtcaaatcct tgcatacttc tgtgacaccc ctgcccattt tctgtcttta 240
attaaccaag gtgttaggtg tgactgtcac aactgttatg ttttccagta aactagaagt 300
atgatatttg ataattatat ttgtatttca ccacctaaat gtaatgttga ttcctcaaga 360
atgaaatgaa ggcactacat tgaaatatgt tttgtataaa tttgtcatgt tgaacagcat 420
tttagcatgg taagttccct tagctatatg aattttggca tgtttcagag agatcagtaa 480
ataaaatatt agataaaaaa aaaaaaaaaa aaaaagggc 519

<210> 351
<211> 533
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 171, 230, 399
<223> n = A,T,C or G

<400> 351
ggccgccctt tttttttttt ttttgggata tgacctttat tgaacttatc caccagagtg 60
gaaataatgt ctgtacaaaa ccaaatgttt gttactataa cttctgcatc acaattaaaa 120
tccaaacagt tttttaaaaa cagtcaactc aatcaaaacc cactacttca naatcaatag 180
cttctttgaa gccacagtaa cacttaaata tggttaagac tcgaatgcan aaatttggtt 240
ggttggaaag ctaattaaac ttccaacttg ctcaaataga attacaaaaa ggcaaaattg 300
tgtttttcac agagatacag tccactggaa tcaccaacac tggacagctg ttagagtatt 360
tagagtcctg agataacaag gaatccaggc atcctttana cagtcttctg ttgtcctttc 420
ttcccaatca gagatttgtg gatgtgtgga atgacaccac caccagcaat tgtagccttg 480
atgagagaat ccaattcttc atctccacga atagcaagtt gcaagtgacg agg 533

<210> 352
<211> 184
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 3, 73
<223> n = A,T,C or G

<400> 352
ggncgcgtcg acgccagggg cgctcccgca agtgggggtc ctccgggact tggaacgccc 60
cggctgggtg gangtccggg cgtcctttcc ccgcttcttc ccacctcggc tggtcccgtt 120
tcctcctgcg cccagtgcgg acctgtctcg gcgcccgctg ccctctcacc gccccacgca 180
ggat 184

<210> 353
<211> 313
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 278, 298, 307, 308
<223> n = A,T,C or G

<400> 353
ggccgcgtcg acgggatgtg agaccactgg acaggcatac tggaagccat catcatcatg 60
ggacctaatt tcccttaagc gaggaaacac tcctaaggat cagggcccct gttatgattc 120
ctcggtctcc agtggcgtcc agggtgccac accggggggt cgatgcaacc ccctagtctt 180
agaattcact gacgcgggta aaaaggccag ctgggatgcc cccaaagttt ggggactaag 240
actctaccga tccacggggg ccgacccggt gacccggntc tctttgaccc gccaggtnct 300
caatgtnnga ccc 313

<210> 354
<211> 522
<212> DNA
<213> Homo sapiens

<400> 354
ggccgcgtcg acgtaatctc tgaggagaag cagcagcaaa catttgctag tcagacaagt 60
gacagggaat ggattccaaa caccagtgtg taaagctaaa tgatggccac ttcatgcctg 120
tattgggatt tggcacctat gcacctccag aggttccgag aagtaaagct ttggaggtca 180
caaaattagc aatagaagct gggttccgcc atatagattc tgctcattta tacaataatg 240
aggagcaggt tggactggcc atccgaagca agattgcaga tggcagtgtg aagagagaag 300
acatattcta cacttcaaag ctttggtcca cttttcatcg accagagttg gtccgaccag 360

ccttggaaaa ctcactgaag aaagctcaat tggactatgt tgacctctat cttattcatt 420
ctccaatgtc tctaaagcca ggtgaggaac tttcaccaac agatgaaaat ggaaaagtaa 480
tatttgacat agtggatctc tgtaccacct gggaggccat gg 522

<210> 355
<211> 157
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 126, 145
<223> n = A,T,C or G

<400> 355
ggccgccctt tttttttttt tttaaggaat atctgtccaa ggggtatggt ttgttatggt 60
cgtgtcatag atactggaga aggagcgatt tgtgggtagt gtctcatggt acagtggaaa 120
cagctnagtc acagggtgtg aattngagtc ctggctc 157

<210> 356
<211> 124
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 50, 57, 74, 84
<223> n = A,T,C or G

<400> 356
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttn aacttanaac 60
cactttgaag tttnttttac agcnctttaa ttgaaacatt atttaactac tgaccaggac 120
tgtt 124

<210> 357
<211> 259
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 43, 48, 54, 67, 80, 84, 115, 123, 137, 167, 208, 217, 232,
243, 245
<223> n = A,T,C or G

<400> 357
ggccgccctt tttttttttt tttttttttt tttttttttt ttnggagnca gctntttaat 60
taggttntta aaacatttan aacnccaatt tgggaggata aattccattc gtcanagcaa 120
acncagatcg caggtanccc tggagctggg gaatagcttt gattttnggt aaaatttggg 180
agtccacagc tttctgatca atcttgcnct gctccgnaat ctcatatttc tntttttctg 240
ggncnaaaat ctcaccttc 259

<210> 358
<211> 578
<212> DNA
<213> Homo sapiens

<400> 358
ggccgcgtcg accaacaacc tgggacgggg gacaggctgc taaacctagt aaaaggagcc 60
tatcaagcac tcaacctcac cagtcccgac agaacccaag agtgctggct gtgtctggta 120
tcgggacccc cctactacga aggggttgcc gtcctaggta cctactccaa ccatacctct 180
gccccagcta actgctccgt ggcctcccaa cacaagctga ccctgtccga agtgaccggg 240

cagggactct gcgtaggagc agttcccaaa acccatcagg ccctgtgtaa taccacccag 300
aaggcgagcg acgggtccta ctatctggct gctcccgccg ggaccatctg ggcttgcaac 360
accgggctca ctccctgcct atctaccact gtactcaacc tcaccaccga ttactgtgtc 420
ctggttgagc tctggccaaa ggtgacctac cactcccctg gttatgttta tgaccagttt 480
gagagaaaaa ccaaatataa aagagagccg gtgtcattaa ctctggccct gctgttggga 540
ggacttacta tgggcggcat agctgcagga gtaggaac 578

<210> 359
<211> 548
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 387
<223> n = A,T,C or G

<400> 359
ggccgcgtcg acattttgat ttggtttggt ctggtttggc tacctgattc ctgctgtctt 60
tttctacgcc aggtgaagag gcactttcaa gatccttctc tgagacctgc accaataaga 120
ctataccaat gttcagttga aacatcaggt ataagtttag cggaaacgaa agtacaacct 180
gctttgaaat aaattccaag gacagattgt cattaacgaa atagaaagtg gactatgccc 240
ctcatgctgc cagcgcctgg tatggtgcgg cgtgacacgc agcgcttgcg gcagtacaat 300
gcccccaatc acccgccccg ccccgacgcg ccgcccactc acggcaaaga gagccaccta 360
gtgagggatt attctcattt ccgcggnggg gttctgcttt tctttctacc atgagcgccc 420
aaggatagac actcctacta cctattacct caaatagcct acatttcttt ccgaaaattt 480
attggttaga tatttttctt ttttttttta atttaaagac cagtgtgatc gtgtattggt 540
tagatttt 548

<210> 360
<211> 573
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 406, 560
<223> n = A,T,C or G

<400> 360
ggccgccctt tttttttttt ttttttagtt tgggatatga cctttattga acttatccac 60
cagagtggaa ataatgtctg tacaaaacca aatgtttgtt actataactt ctgcatcaca 120
attaaaatcc aaacagtttt ttaaaaacag tcaactcaat caaaacccac tacttcagaa 180
tcaatagctt ctttgaagcc acagtaacac ttaaatatgg ttaagactcg aatgcagaaa 240
tttggttggt tggaaagcta attaaacttc caacttgctc aaatagaatt acaaaaaggc 300
aaaattgtgt ttttcacaga gatacagtcc actggaatca ccaacactgg acagctgtta 360
gagtatttag agtcctgaga taacaaggaa tccaggcatc ctttanacag tcttctgttg 420
tcctttcttc ccaatcagag atttgtggat gtgtggaatg acaccaccac cagcaattgt 480
agccttgatg agagaatcca attcttcatc tccacgaata gcaagttgca agtgacgagg 540
ggtaatacgc tttacctttn agtcttttga tgc 573

<210> 361
<211> 540
<212> DNA
<213> Homo sapiens

<400> 361
ggccgccctt tttttttttt ttttgttaat aatttgaaga tgtttattgc attctatttt 60
tggtgggaaa aaaatgtaac atacatttat ttagcacgac attgtgaaat acacaaaaca 120
tgtaactgag aaagcaggaa ttttctattc ctagtccatt tctgaggact aaatcatgaa 180
ctgctcccaa tgtaattaaa tatttcttac aatagttggg caccaagttt aagatttatt 240
aatttctcc tctcagtata ggcagcaatt caccattttc tttcagttcc ttcacaatat 300

ccaatcctcc caccagctcc cctttcacat acagctgagg gtatgttggc caatttgagt 360
aagcttttaa tccttgccga acttcttcat cctccaatat atcgaatgtt tcatattcaa 420
caccagtact atttagtatt tccagaattt gtttgctgaa tccacatttt gcttcctgtt 480
tgtttccttt cataaagagc atcacagaag ctttatttgt cagcactttg agcctttcct 540

<210> 362
<211> 528
<212> DNA
<213> Homo sapiens

<400> 362
ggccgcgtcg acgaatttca ttggctgagg gtaaagttcc atccaagaaa gcttctagtt 60
ggttctctaa gctggcagat aaactgccca taggttctaa agatacaggt ggtgccattt 120
ggacttgggg tggtggccgg gacaccactg tattcactgg cattgtggtg atgctggctg 180
tcactggtct catttggaa ataggagaag gttcttcttt tatggggagg gagatctctc 240
cactcttaat gaggatatca aagaggtcat ccatctgctg actgtgagcg ttggaaatct 300
tgttgggtgt gttaggtcca ttttgcaggg atggaagcgg agcatttctg gattgaagaa 360
cactgttgga ggccttattg ataaagggct gctggacagc tgtacaaatc acaatgtcag 420
agcatacata caaatgtcta atatatacat taaaatcaat ctaaccaacc cagaaggttg 480
ctaatagaat tttcagtgtt atcagtatac ctggacttct gacagtat 528

<210> 363
<211> 139
<212> DNA
<213> Homo sapiens

<400> 363
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgaggggc 139

<210> 364
<211> 464
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 221, 248
<223> n = A,T,C or G

<400> 364
ggccgccctt tttttttttt ttttgcagtt atttttaaaa ctttatttta aaaatatgag 60
catctatttt aaaagttttg ataattattg ccattatttt cttgtgattg gtacaattta 120
aaaataagtc tatgttttca cattgatttt aaaaaatata gcatgtttga attacaaatg 180
attaagcaaa ctctattact tcatagctga ccatcttcca naaaattccc acttaattga 240
atacttanaa aaaaatggcc agtggccgat tgaaaggtat attaaaatta agggcagttt 300
taattctgaa gacaaatatc ttcatggaaa tctatttgta agcttctgag attgctgctg 360
aaagtctaca gtctgtgaat ataccaattc ccctttacaa ctgatgcaga tcattatgaa 420
atactggaag gcatacccta caatttagga attggtgtgg ctgc 464

<210> 365
<211> 102
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 67, 82, 98, 99, 101
<223> n = A,T,C or G

<400> 365
ggccgccctt ttttttttt ttttttttt ttttttttt ttttttttt tgggggaaaa 60
caaaacnccc ccaaaacatt tntttttttt taaaaaanna ng 102

<210> 366
<211> 278
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 46, 153, 175, 269, 275
<223> n = A,T,C or G

<400> 366
ggccgccctt ttttttttt tttcgttttg ctttatttta ttctgngaaa ataagcctta 60
ttataaatca caatgaaatc cacaaaccaa accccaaact ctctagcaaa acaagacccc 120
cttgatgtat aaagtcatcg ctgacaggac agncttttc agttattgct tttgncgctt 180
gtttcttgag aacatgactc caataaggct catggctgcc aagcccattc ctgcaacgct 240
tgcagcgatg atgacatctc tgacctggnc actgnggg 278

<210> 367
<211> 183
<212> DNA
<213> Homo sapiens

<400> 367
ggccgcgtcg acggcgcccc gatctgccct ttaccctgct cttacccct ctataaaacc 60
cagaccttct aaacctcagg ttctctccga taatggcgga cctctcattg accttctcac 120
agaagaccct ccgccgtacg gagaacaggg accgtcctcc tctgacggag atggcgacag 180
aga 183

<210> 368
<211> 485
<212> DNA
<213> Homo sapiens

<400> 368
ggccgcgtcg accggaggtg caggtcctgg tgcttgatgg tcgaggccat ctcctgggcc 60
gcctggcggc catcgtggct aaacaggtac tgctgggccg gaaggtggtg gtcgtacgct 120
gtgaaggcat caacatttct ggcaatttct acagaaacaa gttgaagtac ctggctttcc 180
tccgcaagcg gatgaacacc aacccttccc gaggccccta ccacttccgg gcccccagcc 240
gcatcttctg gcggaccgtg cgaggtatgc tgccccacaa aaccaagcga ggccaggccg 300
ctctggaccg tctcaaggtg tttgacggca tcccaccgcc ctacgacaag aaaaagcgga 360
tggtggttcc tgctgccctc aaggtcgtgc gtctgaagcc tacaagaaag tttgcctatc 420
tggggcgcct ggctcacgag gttggctgga agtaccaggc agtgacagcc accctggagg 480
agaag 485

<210> 369
<211> 488
<212> DNA
<213> Homo sapiens

<400> 369
ggccgcgtcg acagattccc tccgtcgccg ccaagatgat gtgcggggcg ccctccgcca 60
cgcagccggc caccgccgag acccagcaca tcgccgacca ggtgaggtcc cagcttgaag 120
agaaagaaaa caagaagttc cctgtgttta aggccgtgtc attcaagagc caggtggtcg 180
cggggacaaa ctacttcatc aaggtgcacg tcggcgacga ggacttcgta cacctgcgag 240
tgttccaatc tctccctcat gaaaacaagc ccttgacctt atctaactac cagaccaaca 300
aagccaagca tgatgagctg acctatttct gatcctgact ttggacaagg cccttcagcc 360
agaagactga caaagtcatc ctccgtctac cagagcgtgc acttgtgatc ctaaaataag 420
cttcatctcc gggctgtgcc ccttggggtg gaaggggcag gattctgcag ctgcttttgc 480

atttctct 488

<210> 370
<211> 316
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 286, 287, 308, 309
<223> n = A,T,C or G

<400> 370
ggccgcgtcg actacgaaag gcggcaaaaa gggagccaag aagaaagtgg ttgatccatt 60
ttctaagaaa gattggtatg atgtgaaagc acctgctatg ttcaatataa gaaatattgg 120
aaagacgctc gtcaccagga cccaaggaac caaaattgca tctgatggtc tcaagggtcg 180
tgtgtttgaa gtgagtcttg ctgatttgca gaatgatgaa gttgcattta gaaaattcaa 240
gctgattact gaagatgttc agggtaaaaa ctgcctgact aacttnncat ggcatggatc 300
ttacccgnna caaaat 316

<210> 371
<211> 545
<212> DNA
<213> Homo sapiens

<400> 371
ggccgcgtcg acacatggtg ttcaggcgct tcgtggaggt tggccgggtg gcctatgtct 60
cctttggacc tcatgccgga aaattggtcg cgattgtaga tgttattgat cagaacaggg 120
ctttggtcga tggaccttgc actcaagtga ggagacaggc catgcctttc aagtgcatgc 180
agctcactga tttcatcctc aagtttccgc acagtgccca ccagaagtat gtccgacaag 240
cctggcagaa ggcagacatc aatacaaaat gggcagccac acgatgggcc aagaagattg 300
aagccagaga aaggaaagcc aagatgacag attttgatcg ttttaaagtt atgaaggcaa 360
agaaaatgag gaacagaata atcaagaatg aagttaagaa gcttcaaaag gcagctctcc 420
tgaaagcttc tcccaaaaaa gcacctggta ctaagggtac tgctgctgct gctgctgctg 480
ctgctgctgc tgctgctgct gctgctgctg ctgctgctgc tgctaaagtt ccagcaaaaa 540
gatca 545

<210> 372
<211> 524
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 165, 402, 489, 512
<223> n = A,T,C or G

<400> 372
ggccgccctt tttttttttt tttaagtttt taaacttttt atttgcatat taaaaaaatt 60
gtgcattcca ataattaaaa tcatttgaac aaaaaaaaaa tggcactctg attaaactgc 120
attacagcct gcaggacacc ttgggccagc ttggttttac tctanatttc actgtcgtcc 180
caccccactt cttccacccc acttcttcct tcaccaacat gcaagttctt tccttccctg 240
ccagccagat agatagacag atgggaaagg caggcgcggc cttcgttgtc agtagttctt 300
tgatgtgaaa ggggcagcac agtcatttaa acttgatcca acctctttgc atcttacaaa 360
gttaaacagc taaaagaagt aaaataagaa ggcaatgctt gnggaatgta cagtgcatat 420
tggcggcgca cgcctcatta cgattcgcct gcttgcttct cctgttcaat cgtttctttg 480
gaaggcagng gatttttctc ttgcgtctct gncttcttca gttt 524

<210> 373
<211> 342
<212> DNA
<213> Homo sapiens

<400> 373
ggccgcgtcg accaagatgg gtcaccagca gctgtactgg agccacccgc gaaaattcgg 60
ccaggggttct cgctcttgtc gtgtctgttc aaaccggcac ggtctgatcc ggaaatatgg 120
cctcaatatg tgccgccagt gtttccgtca gtacgcgaag gatatcggtt tcattaagtt 180
ggactaaatg ctcttccttc agaggattat ccggggcatc tactcaatga aaaaccatga 240
taattctttg tatataaaat aaacatttga aaaaaccaaa aaaaaaaaaa aaaaaaaaaa 300
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aa 342

<210> 374
<211> 89
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 68, 71, 76, 81
<223> n = A,T,C or G

<400> 374
ggccgcgtcg actttttttt tttttttttt tttttttttt tttttttttt ttttttttta 60
aatttccncc ngggcncagg ncccattta 89

<210> 375
<211> 476
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 69, 92, 98, 144, 164, 183, 192, 239, 288, 289, 330, 337,
344, 424, 425, 426
<223> n = A,T,C or G

<400> 375
ggccgcgtcg acagcgacgg tagctctagc cgggcctgag ctgtgctagc acctcccccca 60
ggagaccgnt gcagtcggcc agccccccttc tncacggnaa ccatgtgcga ccgaaaggcc 120
gggatcaaaa atgcggacat gtcngaagag atgcaacagg actnggtgga gtgcgctact 180
cangcgctgg anaaatacaa catagagaag gacattgcgg ctcatatcaa gaaggaatnt 240
gacaagaagt acaatcccac ctggcattgc atcgtgggga ggaacttnng tagttatgtg 300
acacatgaaa ccaaacactt catctacttn tacctgngcc aagnggccat tcttctgttc 360
aaatctggtt aaaagcatgg actgtgccac acacccagtg atccatccaa aacaaggac 420
tgcnnnctaa attccaaata ccagagactg aaattttcag ccttgctaag ggaaca 476

<210> 376
<211> 476
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 175
<223> n = A,T,C or G

<400> 376
ggccgccctt tttttttttt tttgtcctaa attgtttatt aagtatgaat tttacaaact 60
ttacttatat tagcggtaac ggtggagctg gagagtattg cgccttctcc aagctgcccg 120
gcgagagcca ccaatagtgt ggtggaactt gtggcccttt ccaaggccac ggctntttcg 180
gcctgcagat gtcagcccac gcatctccct gtgcttgtgg actggtttgg tgatccactg 240
ggtgtcagga tttcttctga tagctttatg gaatggatca atgaggataa cctcaaaaaa 300
tttgtatgtg gaatcttcac caacccagta agaattcagg actctcagag ccccacagtg 360
gcgtccagct cgctcctctg caacggactg aaggcttcga gcaaacttta gctggttaac 420

accatgatgg acaggcttgc cgtaagttgc acccttagga actgggcgtt ttcggc 476

<210> 377
<211> 438
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 36, 181, 296, 375, 422
<223> n = A,T,C or G

<400> 377
ggccgccctt tttttttttt tttagaaaaa gcccanaagg cactttattg gaggtctctg 60
cctccattca caggagaaag gagctgggag ccccatccta agggtcccag catcagccca 120
ctggagggcc tggaacagtc cagcactctg tgggagagga gtggggaggg gaatgtttta 180
naaaaaatag atctctatgt acatctgaca tatttatata gcacataaat tagggagtgc 240
tctgacccct gcccgtggag cccaagcact gagcagggag gtgaacgcca gtccanaaag 300
aaggtgctgg agcccctgct ctgtcctctc catcacggtg ctcccctagg gcctccccag 360
gcctccttgg ctcantccag gtgtctgcag gaggaaggtg ttgtctgcat ttagtgtctg 420
anactgggtt tgaggagg 438

<210> 378
<211> 591
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 578
<223> n = A,T,C or G

<400> 378
ggccgcgtcg acgtggaagt gacatcgtct ttaaaccctg cgtggcaatc cctgacgcac 60
cgccgtgatg cccagggaag acagggcgac ctggaagtcc aactacttcc ttaagatcat 120
ccaactattg gatgattatc cgaaatgttt cattgtggga gcagacaatg tgggctccaa 180
gcagatgcag cagatccgca tgtcccttcg tgggaaggct gtggtgctga tgggcaagaa 240
caccatgatg cgcaaggcca tccgagggca cctggaaaac aacccagctc tggagaaact 300
gctgcctcat atccgggga atgtgggctt tgtgttcacc aaggaggacc tcactgagat 360
cagggacatg ttgctggcca ataaggtgcc agctgctgcc cgtgctggtg ccattgcccc 420
atgtgaagtc actgtgccag cccagaacac tggtctcggg cccgagaaga cctccttttt 480
ccaggcttta ggtatcacca ctaaaatctc caggggcacc attgaaatcc tgagtgatgt 540
gcagctgatc aagactggag acaaagtggg agccagcnaa gccacgctgc t 591

<210> 379
<211> 510
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 369, 469, 499
<223> n = A,T,C or G

<400> 379
ggccgccctt tttttttttt tttttttaaa gaagtaagcc tttatttcct tgttttgcaa 60
ataaaactgg ctaagttggt tgctttttgg tgattagtca aagagaccaa atcccatatc 120
ctcgtccgac tcctccgact cttccttggc ttcaacctta gctggggctg cagcagcagc 180
aggagcagct gtggtggcag cagccacagg ggcagcagcc acaaaggcag atggatcagc 240
caagaaggcc ttgacctttt cagcaagtgg gaaggtgtaa tccgtctcca cagacaaggc 300
caggactcgt ttgtacccgt tgatgataga atggggtact gatgcaacag ttgggtagcc 360
aatctgcana cagacactgg caacattgcg gacaccctcc aggaagcgag aatgcagagt 420

ttcctctgtg atatcaagca cttcagggtt gtagatgctg ccattgtcna acacctgctg 480
gatgaccagc ccaaaggana agggggagat 510

<210> 380
<211> 354
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 200, 207, 231, 291, 349
<223> n = A,T,C or G

<400> 380
ggccgcgtcg actagttcta gatcgcgagc ggtcaccctt tttttttttt tttaaaatga 60
atcaatttta ttccaattct tcaaaattta tacgtaatat gttgtttcca aaatgtaagt 120
cacccttat ataatagttt tattatttca tctttctttg atagtttttt tttcatcttt 180
tctttatggt tcttcagtan aagccanaat cttgagttgc ccagttagga ncctctgacc 240
tgctattctg attaagtttc ttctcaatat tcatggccaa catctggctt ntaaaggaaa 300
ggcttttggt cttttcaatc acttgctgat agggtgagac tgcattgtna ccca 354

<210> 381
<211> 466
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 84, 88, 96, 99, 118, 161, 197, 220, 229, 292, 317, 374, 411,
415, 427, 429, 458
<223> n = A,T,C or G

<400> 381
ggccgccctt tttttttttt tttttttttt tttttttcct gggcacaggt cccatttatt 60
gtaaaaaata ataataatta cagngatnaa tagctnttnt taaattacaa aacagaancc 120
acaaagaagg aagaggaaaa accccaggac ttccaagggt naagctgtcc cctcctccct 180
gccaccctcc caggctnatt agtgtccttg gaaggggcan aggactcana ggggatcagt 240
ctccaggggc cctgggctga agcgggtgag gcaaaaagtc ctgaggccac anagctgggc 300
aacctgagcc gcctttntgg ccccctcccc caccactgcc caaacctgtt tacagcacct 360
tcgcccctcc cctntaaacc cgtccatcca ctttgcactt cccaggcagg ngggngggca 420
aggcctnanc catactcctg ggcgcgggtt tcggtganca aggcac 466

<210> 382
<211> 311
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 30, 208, 298
<223> n = A,T,C or G

<400> 382
gctttacaag aggttctgaa gactgccctn atccacgatg gcctagcacg tggaattcgc 60
gaagctgcca aagccttaga caagcgccaa gcccatcttt gtgtgcttgc atccaactgt 120
gatgagccta tgtatgtcaa gttggtggag gcccttgtg ctgaacacca aatcaaccta 180
attaaggttg atgacaacaa gaaactanga gaatgggtag gcctttgtaa aattgacaga 240
gaggggaaac cccgtaaagt ggttggttgc agttgtgtag tagttaagga ctatggcnag 300
gagtctcagg c 311

<210> 383
<211> 546

<212> DNA
<213> Homo sapiens

<400> 383
ggccgcgtcg acgctggagg agctgggtgt ggggtgcgtt gggctggtgg ggaggcctag 60
tttgggtgca agtaggtctg attgagcttg tgttgtgctg aagggacagc cctgggtcta 120
ggggagagag tccctgagtg tgagacccgc cttccccggt cccagcccct cccagttccc 180
ccagggacgg ccacttcctg gtccccgacg caaccatggc tgaagaacaa ccgcaggtcg 240
aattgttcgt gaaggctggc agtgatgggg ccaagattgg gaactgccca ttctcccaga 300
gactgttcat ggtactgtgg ctcaagggag tcaccttcaa tgttaccacc gttgacacca 360
aaaggcggac cgagacagtg cagaagctgt gcccaggggg gcagctccca ttcctgctgt 420
atggcactga agtgcacaca gacaccaaca agattgagga atttctggag gcagtgctgt 480
gccctcccag gtaccccaag ctggcagctc tgaaccctga gtccaacaca gctgggctgg 540
acatat 546

<210> 384
<211> 455
<212> DNA
<213> Homo sapiens

<400> 384
ggccgcgtcg acgtcctctt tccttgccta acgcagccat ggctcgtggt cccaagaagc 60
atctgaagcg ggtggcagct ccaaagcatt ggatgctgga taaattgacc ggtgtgtttg 120
ctcctcgtcc atccaccggt ccccacaagt tgagagagtg tctccccctc atcatttcc 180
tgaggaacag acttaagtat gccctgacag gagatgaagt aaagaagatt tgcatgcagc 240
ggttcattaa aatcgatggc aaggtccgaa ctgatataac ctaccctgct ggattcatgg 300
atgtcatcag cattgacaag acgggagaga atttccgtct gatctatgac accaagggtc 360
gctttgctgt acatcgtatt acacctgagg aggccaagta caagttgtgc aaagtgagaa 420
agatctttgt gggcacaaaa ggaatccctc atctg 455

<210> 385
<211> 465
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 247, 396
<223> n = A,T,C or G

<400> 385
ggccgccctt tttttttttt tttcggatgc aaacagcaaa aggctttatt gggaacacgg 60
gtacccgggc gactcagtct atcggatgac tggcgcgccg agtgtggggt ttttaccctt 120
tttatagggc tggggagcaa aaagcgcggt tacagaagcg agaagcgagc tgattggtta 180
gtttaaataa ggcttggggt ttttcccggt cttttgggga acttgaaact gaggtgggac 240
tttccanaaa ctgttgctag tttcgcttta tctgagtacc atctgttctt ggccctgagc 300
cggggcccag gtgctcgacc acagatatcc tgtttggccc ctgtcccagt tttgttcagc 360
cttattcttt aactaaactt ccttgtgact tttganaact cagctctggt actttttcat 420
gccttgcaaa atggcgttac tgcagctagc ttgctaagcc ttatg 465

<210> 386
<211> 532
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 477
<223> n = A,T,C or G

<400> 386
ggccgccctt tttttttttt tttattgttg ttgctgttta tttttaaaat cacacattga 60

atacacacaa caatcagatt tcttcaccaa acccccaatt ttttagcaac tggctctatt 120
cagcaccaaa aactccagtc tgtgggaagt gcacagacac agacttcact tctgtgtctt 180
ggtcgagcaa tccatcaggt cattggttag gttcaggact tgccctcttt tccttccctc 240
ttcatggctc tccagaccca aggttctcaa ggcttcagat ttatggccca cagcccctat 300
taccacctaa atccagcagc catttgggaa gaattcaaaa taatttgaga tgaatgaaat 360
gacaggacct gtattacaga tgggtattct ccattccaag taaactgttt cttaatgagt 420
tctgagactc tggtcttgga tgccatgatc atactgggta attatttcta gtctganact 480
ttgtgacttt gtcagatgcc tcaaaaaaaa aagtgatcag tattctggaa ac 532

<210> 387
<211> 593
<212> DNA
<213> Homo sapiens

<400> 387
ggccgccctt tttttttttt tttatggaac aagaattcaa tttattctct atttataaaa 60
catttttta aagtgccttg ggtataaaaa tctaaatgtc tgcggtgtga tcagtcagga 120
gcacgtaact atcactcttc gcatcctttg gtcactggga gatcctttgg gggctgggag 180
gtccttctgt cccaggctaa aggaaaagct tcacaagggt aagagccaca gaaccctcgg 240
caagaaaggc cggtcaggga gaatgaatgg tacagagagg aaaggaagga aaggggtgg 300
aacagaggta gaaggcaagg aagggatgcc gcactggaga ccgatgggga cactctaatt 360
gtgcaagagg gaggatcttc cttcttgaat gctgaacaca gctagtctga accttccttg 420
gaaagtccag ctgtttgccc atgcataggg ccaactctcc ctgcaaagca gcaaatgtgg 480
cttctatcag gaaggaaaag tatccatcag tgtgacaaga ggtcaccttc gaacttgcat 540
gaactccttg cgcagccaca aagagtcctg gtagaagtga ggatcgccta gtc 593

<210> 388
<211> 256
<212> DNA
<213> Homo sapiens

<400> 388
ggccgcgtcg accgagcacc tgggccccgg ctcagggcca agaacagatg gtactcagat 60
aaagcgaaac tagcaacagt ttctggaaag tcccacctca gtttcaagtt ccccaaaaga 120
ccgggaaaaa ccccaagcct tatttaaact aaccaatcag ctcgcttctc gcttctgtaa 180
ccgcgctttt tgctccccag ccctataaaa agggtaaaaa ccccacactc ggtgcgccag 240
tcatccgata gactga 256

<210> 389
<211> 514
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 225, 416, 492, 501, 504
<223> n = A,T,C or G

<400> 389
ggccgccctt tttttttttt tttgtaaagc tctgccataa acttctagcg tgtgccaatg 60
gtcacctgcc acactcgcac caggttgtcc gtgtagccag caaacagagt ctggccatca 120
gcagaccagg ccagggaggt gcactggggt ggttctgcct tgctgctggt actgataact 180
tcttgcttca gttcatctac aatgatcttt ccctctaaat cccanatctt gatgctgggg 240
cctgtggcag cacacagcca gtagcggtta gggctgaagc acagggcgtt gatgatgtcc 300
ccaccatcta gcgtgtaaag gtgtttgcct tcgttgagat cccataacat ggcctggcca 360
tccttgcctc cagaagcaca gagggatcca tctggagaga cagtcaccgt gttcanatag 420
cctgtgtggc caatgtggtt ggtcttcagc ttgcagttag ccaggttcca taccttgacc 480
agcttgtccc anccacagga nacnatgata gggt 514

<210> 390
<211> 554
<212> DNA

<213> Homo sapiens

<220>
<221> misc_feature
<222> 30, 63, 97, 255, 313, 345, 353, 441, 508
<223> n = A,T,C or G

<400> 390
ggccgccctt tttttttttt tttcatggan actgagtctt gctacattgc ccaggctcgt 60
ctnaaactcc tggcctcatg caatcctccc accttancca ccccaagcat ttaggattat 120
aggcatgaac caccatgccc aaatgaggtt tacttttatg gcccaggaca taactttcct 180
tggtatatgt tctctggtca cttgaaaaga tgaagcattc tataaattac atagcactgg 240
ttgattacat atgtngagta tctttctata tccttgctga ttttcttgct tggttactcc 300
accatttatt ganaaatagg tgttgacgtc tccaattata atttnggact tgngtatttc 360
tctttttagt tccatcagtc tttttcata tattttgcag ttctactgct aacacattta 420
aaactgctat gtcttcttag nggattgatt aaccctttta tcatataatg cctagtcact 480
gtctctggta actgctttgt tatgaggnct actttatcta atattaaata taaccatacc 540
tgctttcttt ggat 554

<210> 391
<211> 559
<212> DNA
<213> Homo sapiens

<400> 391
ggccgcgtcg acggtccagt ttgtaaaaga cagaatttcg gtggtgcagg ccctggttct 60
gacccaacag tatcaccaac tcaaatcaat agatccagaa gaagtagaat cgcgtgaata 120
aaagatttta ttcagtttcc agaaagaggg gggaatgaaa gaccccacca taaggcttag 180
caagctagct gcagtaacgc cattttgcaa ggcatgaaaa agtaccagag ctgagttctc 240
aaaagtcaca aggaagttta gttaaagaat aaggctgaac aaaactggga caggggccaa 300
acaggatatc tgtggtcgag cacctgggcc ccggctcagg gccaagaaca gatggtactc 360
agataaagcg aaactagcaa cagtttctgg aaagtcccac ctcagtttca agttccccaa 420
aagaccggga aaaaccccaa gccttattta aactaaccaa tcagctcgct tctcgcttct 480
gtaaccgcgc tttttgctcc ccagccctat aaaaagggta aaaaccccac actcggtgcg 540
ccagtcatcc gatagactg 559

<210> 392
<211> 464
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 128, 204, 374, 434
<223> n = A,T,C or G

<400> 392
ggccgccctt tttttttttt tttttttttg gctctagagg gggtagaggg ggtgctatag 60
ggtaaatacg ggccctattt caaagatttt taggggaatt aattctagga cgatgggcat 120
gaaactgngg tttgctccac agatttcaga gcattgaccg tagtataccc ccggtcgtgt 180
agcggtgaaa gtggtttggt ttanacgtcc gggaattgca tctgttttta agcctaatgt 240
ggggacagct catgagtgca agacgtcttg tgatgtaatt attatacgaa tgggggcttc 300
aatcgggagt actactcgat tgtcaacgtc aaggagtcgc aggtcgcctg gttctaggaa 360
taatgggggga agtntgtagg agttgaagat tagtccgccg tagtcggtgt actcgtaggt 420
tcagtaccat tggnggccaa ttgatttgat ggtaagggag ggat 464

<210> 393
<211> 569
<212> DNA
<213> Homo sapiens

<220>

<221> misc_feature
<222> 271
<223> n = A,T,C or G

<400> 393
ggccgccctt tttttttttt ttttattatc ttgctttata tttaatggat tagaactata 60
aagattctta actttgaaag cagaaatata agttggatag tagttgcaga tctttaatac 120
cattttcaat ttcatttatg agctgctaca ttataaatga gatgctctaa aataataatc 180
gcttttgttg ttgttgttat agaacaatga aaattcctgt taggaacaca agttgctgtt 240
tatatttgct tgttctctta aatagtatga naagaagtaa ggtggagctg ttggaaaagc 300
ccatcgtgga cctttggaga ttatcttctt ggttcagtca tctccaccac agatttttaa 360
gagtgtgatt tcatagtctc cagaagtatc cgatttaatt gctgaatata gggaatagcc 420
ataatgcttc ttgaactctg ttcgaatgtc caaaaggtca atttctgatc tggacaccat 480
tattcggttc agagtaaact catcagttcc aatacccttc aaggctcgat gcagtctttc 540
ggctaaaaag gccggcgtgt tcctcacac 569

<210> 394
<211> 74
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 66, 67
<223> n = A,T,C or G

<400> 394
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 60
tggggnncca aatt 74

<210> 395
<211> 567
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 56, 223, 399, 459, 462, 542
<223> n = A,T,C or G

<400> 395
ggccgccctt tttttttttt ttttgggata tgacctttat tgaacttatc caccanagtg 60
gaaataatgt ctgtacaaaa ccaaatgttt gttactataa cttctgcatc acaattaaaa 120
tccaaacagt tttttaaaaa cagtcaactc aatcaaaacc cactacttca gaatcaatag 180
cttctttgaa gccacagtaa cacttaaata tggttaagac tcnaatgcag aaatttggtt 240
ggttggaaag ctaattaaac ttccaacttg ctcaaataga attacaaaaa ggcaaaattg 300
tgtttttcac agagatacag tccactggaa tcaccaacac tggacagctg ttagagtatt 360
tagagtcctg agataacaag gaatccaggc atcctttana cagtcttctg ttggcctttc 420
ttcccaatca gagatttgtg gatgtgtgga atgacaccnc cnccagcaat tgtagccttg 480
atgagagaat ccaattcttc atctccacga atagcaagtt gcaagtgacg aggggtaata 540
cnctttacct ttaagtcttt tgatgca 567

<210> 396
<211> 433
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 357
<223> n = A,T,C or G

<400> 396
ggccgcgtcg accaccaaat ggcggatgac gccggtgcag cggggggccc cgggggccct 60
ggtggccctg ggatggggaa ccgcggtggc ttccgcggag gtttcggcag tggcatccgg 120
ggccggggtc gcggccgtgg acggggccgg ggccgaggcc gcggagctcg cggaggcaag 180
gccgaggata aggagtggat gcccgtcacc aagttgggcc gcttggtcaa ggacatgaag 240
atcaagtccc tggaggagat ctatctcttc tccctgccca ttaaggaatc agagatcatt 300
gatttcttcc tgggggcctc tctcaaggat gaggttttga agattatgcc agtgcanaag 360
cagacccgtg ccggccagcg caccaggttc aaggcatttg ttgctatcgg ggactacaat 420
ggccacgtcg gtc 433

<210> 397
<211> 463
<212> DNA
<213> Homo sapiens

<400> 397
ggccgcgtcg acgaaaaatc agtcagtgcc ctagaaaagt ctctgacctc gttgtctgag 60
gtggtcctac agaaccggag aggattagat ctgctgttcc taaaagaagg aggattatgt 120
gctgccctaa aagaagaatg ctgtttctat gcagaccaca ctggcgtagt aagggatagc 180
atggctaagc taagagaaag gctaaaccag aggcaaaaat tgttcgaatc aggacaaggg 240
tggtttgagg gactgtttaa caggtcccca tggttcacga ccctgatatc caccattatg 300
ggccctctga tagtactttt attaatccta ctcctcggac cctgcattct caaccgcttg 360
gtccagtttg taaaagacag aatttcggtg gtgcaggccc tggttctgac ccaacagtat 420
caccaactca aatcaataga tccagaagaa gtagaatcgc gtg 463

<210> 398
<211> 560
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 461, 547
<223> n = A,T,C or G

<400> 398
ggccgccctt tttttttttt tttctctttt tccttctcga gggcattgtt tctggttgtt 60
gtttcattaa tgatattgtt actcttggca ggtatacttt taaattcttc aacctttttct 120
ttatcttttt gaagttgttt ctccagtttt ttggctttac tcgtggcatg ttttaacttt 180
tctctaactt gaacatcttc caaatctagc tgtgtaaatt tttctttatt ctcctcaata 240
aattttgtaa ttttattcag tttcttttct gtatctttta catctttatt cttagctttc 300
atttcatttg atagtatatt gctcttctca ttaatttctt tggtatcttc atgaattttt 360
tcctttttgag tttccatttc agcaattcgt ttctgcaact cataaatata atattgacaa 420
acatgattct tttttctaaa tatttcattt tccaaggtaa naaattcgat agctatgttt 480
ttctctcctt ctaaggcatc cttttccttt tccaccatct ttaccctgtt taacttctct 540
cctctgngtt catttaatat 560

<210> 399
<211> 347
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 27, 50, 189, 190, 249, 251, 307, 313
<223> n = A,T,C or G

<400> 399
cggcccccac agccggatcc cctcagnctt ccaggtcctc aactcccgcn gacgctgaac 60
aatggcctcc atggggctac aggtaatggg catcgcgctg gccgtcctgg gctggctggc 120
cgtcatgctg tgctgcgcgc tgcccatgtg gcgcgtgacg gccttcatcg gcagcaacat 180
tgtcacctnn cagaccatct gggagggcct atggatgaac tgcgtggtgc agagcaccgg 240

ccagatgcng ngcaaggtgt acgactcgct ggtggcactg ccggaagacc tgcaggcggc 300
ccgcgcnctt gtnatcatca gcatcatcgt ggctgctctg ggcgtgc 347

<210> 400
<211> 139
<212> DNA
<213> Homo sapiens

<400> 400
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgaggggc 139

<210> 401
<211> 489
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 389, 450
<223> n = A,T,C or G

<400> 401
ggccgcgtcg acgcaggctc cgggctgaag attgcttctc ttctctcctc caaggtctag 60
tgacggagcc cgcgcgcggc gccaccatgc ggcagaaggc ggtatcgctt ttcttgtgct 120
acctgctgct cttcacttgc agtggggtgg aggcaggtga gaatgcgggt aagaaaaagt 180
gctcggagag ctcggacagc ggctccgggt tctggaaggc cctgaccttc atggccgtcg 240
gaggaggact cgcagtcgcc gggctgcccg cgctgggctt caccggcgcc ggcatcgcgg 300
ccaactcggt ggctgcctcg ctgatgagct ggtctgcgat cctgaatggg ggcggcgtgc 360
ccgccggggg gctagtggcc acgctgcana gcctcggggc tggtggcagc agcgtcgtca 420
taggtaatat tggtgccctg atgggctacn ccacccacaa gtatctcgat agtgaggagg 480
atgaggagt 489

<210> 402
<211> 488
<212> DNA
<213> Homo sapiens

<400> 402
ggccgcgtcg acgtccttcc gaggaagcta aggctgcgtt ggggtgaggc cctcacttca 60
tccggcgact agcaccgcgt ccggcagcgc cagccctaca ctcgcccgcg ccatggcctc 120
tgtctccgag ctcgcctgca tctactcggc cctcattctg cacgacgatg aggtgacagt 180
cacggaggat aagatcaatg ccctcattaa agcagccggt gtaaatgttg agcctttttg 240
gcctggcttg tttgcaaagg ccctggccaa cgtcaacatt gggagcctca tctgcaatgt 300
aggggccggt ggacctgctc cagcagctgg tgctgcacca gcaggaggtc ctgccccctc 360
cactgctgct gctccagctg aggagaagaa agtggaagca aagaaagaag aatccgagga 420
gtctgatgat gacatgggct ttggtctttt tgactaaacc tcttttataa catgttcaat 480
aaaaagct 488

<210> 403
<211> 404
<212> DNA
<213> Homo sapiens

<400> 403
ggccgcgtcg acttggaaac ctctgcgcca tgagagccaa gtggaggaag aagcgaatgc 60
gcaggctgaa gcgcaaaaga agaaagatga ggcagaggtc caagtaaacc gctagcttgt 120
tgcaccgtgg aggccacagg agcagaaaca tggaatgcca gacgctgggg atgctggtac 180
aagttgtggg actgcatgct actgtctaga gcttgtctca atggatctag aacttcatcg 240
ccctctgatc gccgatcacc tctgagaccc accttgctca taaacaaaat gcccatgttg 300
gtcctctgcc ctggacctgt gacattctgg actatttctg tgtttatttg tggccgagtg 360

taacaaccat ataataaatc acctcttccg ctgttttagc tgaa 404

<210> 404
<211> 502
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 124, 137, 294, 357, 379, 382
<223> n = A,T,C or G

<400> 404
ggccgcgtcg actttttttt tttttttttt tttttactg ggaatatata ctttttattt 60
agtcattttt gtttacaatt gaaactctgg gaattcaaaa ttaacatcct tgcccgtgag 120
cttnttatag acaccanaaa aagtttcaac cttgtgttcc acattgttct gctgtgcttt 180
gtccaaatga acctttatga gccggctgcc atctagtttg acgcggattc tcttgcccac 240
aatttcgctt gggaagacca agtcctcaag gatggcatcg tgcacagctg tcanagtacg 300
gctcctggga cgcttttgct tattttttgt acggcttttt cgagttggct taggcanaat 360
tctcctctga gcgataaana cnacatgctt cccactgaac tttttctcca attcgcgtac 420
tagccggact tggattttct ggaaagattt cagttgagga acgggaacaa agattatgat 480
agctttccga ccaccaccaa ct 502

<210> 405
<211> 139
<212> DNA
<213> Homo sapiens

<400> 405
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaaccattc 60
gtagacgacc tgcttctggg tcggggtttc gtacgtagca gagcagctcc ctcgctgcga 120
tctattgaaa ggtcgacgc 139

<210> 406
<211> 99
<212> DNA
<213> Homo sapiens

<400> 406
ggccgcgtcg accgaaaccc cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag 60
gttccccacg aacgtgcggt gcgtgacggg cgagggggc 99

<210> 407
<211> 501
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 435, 467, 468
<223> n = A,T,C or G

<400> 407
ggccgcgtcg actttttttt ttcggatgca aacagcaaaa ggctttattg ggaacacggg 60
tacccgggcg actcagtcta tcggatgact ggcgcaccga gtgtggggtt tttacccttt 120
ttatagggct ggggagcaaa aagcgcggtt acagaagcga gaagcgagct gattggttag 180
tttaaataag gcttggggtt tttcccggtc ttttggggaa cttgaaactg aggtgggact 240
ttccagaaac tgttgctagt ttcgctttat ctgagtacca tctgttcttg gccctgagcc 300
ggggcccagg tgctcgacca cagatatcct gtttggcccc tgtcccagtt ttgttcagcc 360
ttattcttta actaaacttc tttgtgactt ttgagaactc agctctggta ctttttcatg 420
ccttgcaaaa tggcngttac tgcagctagc ttgctaagcc ttatggnngg ggtctttcat 480
tcccccctct ttctggaaac t 501

<210> 408
<211> 139
<212> DNA
<213> Homo sapiens

<400> 408
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgagggggc 139

<210> 409
<211> 505
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 496
<223> n = A,T,C or G

<400> 409
ggccgcgtcg acgtcagaga ggtggttttc ttcaatcagt acaaagtact gagacaatgg 60
ttagggttgt tttcttaatt cttttcctgg tagggcaaca agaaccattt ccaatctaga 120
ggaaagctcc ccagcattgc ttgctcctgg gcaaacattg ctcttgagtt aagtgaccta 180
attcccctgg gagacatacg catcaactgt ggaggtccga ggggatgaga agggataccc 240
accacctttc aagggtcaca agctcactct ctgacaagtc agaataggga cactgcttct 300
atccctccaa tggagagatt ctggcaacct ttgaacagcc cagagcttgc aacctagcct 360
cacccaagaa gactggaaag agacatatct ctcagctttt tcaggaggcg tgcctgggaa 420
tccaggaact ttttgatgct aattagaagg cctggactaa aaatgtccac tatggggtgc 480
actctacagt ttttgnaatg ctagg 505

<210> 410
<211> 472
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 81, 156, 167, 178, 221, 324, 365, 416, 449
<223> n = A,T,C or G

<400> 410
ggccgccctt tttttttttt tttaactgaa agagttgaca attttatttt cacatttccc 60
aatacaaagg aaaactgcat nttttttgtc ccacttctcc cctccaaaac tattctcttt 120
cataggacag gggagcaagt cttccttatg ctgttnagaa aactcantat cacagcanca 180
tgatctcctg gtgaagcaaa acaggtaata taaaaccgat ncaataaggc ctcccctcta 240
tccttatctg tctggtcgag tcattccggg ccgagtgggc accatcatgg gacgggcagg 300
aggtctcatc attgggggcc cagncatcat tggcatatgg cctcccatgg gcggcctcat 360
tccangagca ggtcccactg gcatcatccc aggaggagga gggcccatca ttggcntcat 420
gggagggccc cccatatggg gtgctggcnt cataccaggg cgaggaggac cc 472

<210> 411
<211> 629
<212> DNA
<213> Homo sapiens

<400> 411
ggccgcgtcg acccagttga catttggagt ataggcacca tatttgctga actagcaact 60
aagaaaccac ttttccatgg ggattcagaa attgatcaac tcttcaggat tttcagagct 120
ttgggcactc ccaataatga agtgtggcca gaagtggaat ctttacagga ctataagaat 180
acatttccca aatggaaacc aggaagccta gcatcccatg tcaaaaactt ggatgaaaat 240

ggcttggatt tgctctcgaa aatgttaatc tatgatccag ccaaacgaat ttctggcaaa 300
atggcactga atcatccata ttttaatgat ttggacaatc agattaagaa gatgtagctt 360
tctgacaaaa agtttccata tgttatgtca acagatagtt gtgtttttat tgttaactct 420
tgtctatttt tgtcttatat atatttcttt gttatcaaac ttcagctgta cttcgtcttc 480
taatttcaaa aatataactt aaaaatgtaa atattctata tgaatttaaa tataattctg 540
taaatgtgtg taggtctcac tgtaacaact atttgttact ataataaaac tataatattg 600
atgtcaggaa tcaggaaaaa atttgagtt 629

<210> 412
<211> 611
<212> DNA
<213> Homo sapiens

<400> 412
ggccgcgtcg acccacgaag aaggagaggc aggtgctggc cagcagacca gccaggacta 60
ccgtggcgac gctcccaggc cagatggtgg cgggtagtgg agggctgtcg gtgggctgcc 120
gagaccgagt gcacagggct ctgacctatg aattgacagc cagtgctctc gtctcccctc 180
tggctgccaa ttccataggt cacaggtatg ttcgcctcaa tgccagccac caggacctgc 240
agggataggg gagggccggg ggtgtccagc agtcagcaga gatcctgcga ccccagtgca 300
gcactcatgg tcccacctcc ctctgtctca ttccccgtga atgagcctga acagcttcag 360
tcctgcccct gccctgcctg ccctgtggca cctctatgct ttgcccatgc tgttcccttg 420
ggctgcaata ctcttcctag cttatttgcc aggctcactc ttactaaccc tttcaagctc 480
tgtccaagca tttgctgcct ccagaaggcc ttattgaagc ttctaagtcc ccacctgggc 540
acccccacac agtgctgccg cagagcactg ccctctcgga gccccggtgc tggtttctgc 600
ttatgtctcg c 611

<210> 413
<211> 544
<212> DNA
<213> Homo sapiens

<400> 413
ggccgcgtcg accgccgcca tcatgggtcg catgcatgct cccgggaagg gcctgtccca 60
gtcggcttta ccctatcgac gcagcgtccc cacttggttg aagttgacat ctgacgacgt 120
gaaggagcag atttacaaac tggccaagaa gggccttact ccttcacaga tcggtgtaat 180
cctgagagat tcacatggtg ttgcacaagt acgttttgtg acaggcaata aaattttaag 240
aattcttaag tctaagggac ttgctcctga tcttcctgaa gatctctacc atttaattaa 300
gaaagcagtt gctgttcgaa agcatcttga gaggaacaga aaggataagg atgctaaatt 360
ccgtctgatt ctaatagaga gccggattca ccgtttggct cgatattata agaccaagcg 420
agtcctccct cccaattgga aatatgaatc atctacagcc tctgccctgg tcgcataaat 480
ttgtctgtgt actcaagcaa taaaatgatt gtttaactaa aaaaaaaaaa aaaaaagtcg 540
acgc 544

<210> 414
<211> 368
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 30, 84, 89, 130, 135, 198, 210, 222, 228, 246, 288, 327,
333, 340, 357
<223> n = A,T,C or G

<400> 414
cttcgtggca ccctcaaggg ccacaacggn ttgggtaacc cagatcgcta ctaccccgca 60
gttcccggac atgatcctct ccgnctctng agataagacc atcatcatgt ggaaactgac 120
cagggatgan accanctatg gaattccaca gcgtgctctg cggggtcact cccactttgt 180
tagtgatgtg gttatctnct cagatggccn gtttgccctc tnaggctnct gggatggaac 240
cctgcncctc tgggatctca caacgggcac caccacgagg cgatttgngg gccataccaa 300
ggatgtgctg agtgtggcct tctcctntga canccggcan attgtctctg gatctcnaga 360
taaaccat 368

<210> 415
<211> 536
<212> DNA
<213> Homo sapiens

<400> 415
ggccgcgtcg acctgtgaaa atggttcgct attcacttga cccggagaac cccacgaaat 60
catgcaaatc aagaggttcc aatcttcgtg ttcactttaa gaacactcgt gaaactgctc 120
aggccatcaa gggtatgcat atacgaaaag ccacgaagta tctgaaagat gtcactttac 180
agaaacagtg tgtaccattc cgacgttaca atggtggagt tggcaggtgt gcgcaggcca 240
agcaatgggg ctggacacaa ggtcggtggc ccaaaaagag tgctgaattt ttgctgcaca 300
tgcttaaaaa cgcagagagt aatgctgaac ttaagggttt agatgtagat tctctggtca 360
ttgagcatat ccaagtgaac aaagcaccta agatgcgccg ccggacctac agagctcatg 420
gtcggattaa cccatacatg agctctccct gccacattga gatgatcctt acggaaaagg 480
aacagattgt tcctaaacca gaagaggagg ttgcccagaa gaaaaagata tcccag 536

<210> 416
<211> 417
<212> DNA
<213> Homo sapiens

<400> 416
ggccgcgtcg actttggccg cctccctacc gctccaagcc cagccctcag ccatggcatg 60
ccccctggat caggccattg gcctcctcgt ggccatcttc cacaagtact ccggcaggga 120
gggtgacaag cacaccctga gcaagaagga gctgaaggag ctgatccaga aggagctcac 180
cattggctcg aagctgcagg atgctgaaat tgcaaggctg atggaagact tggaccggaa 240
caaggaccag gaggtgaact tccaggagta tgtcaccttc ctgggggcct tggctttgat 300
ctacaatgaa gccctcaagg gctgaaaata aatagggaag atggagacac cctctggggg 360
tcctctctga gtcaaatcca gtggtgggta attgtacaat aaattttttt tggtcaa 417

<210> 417
<211> 522
<212> DNA
<213> Homo sapiens

<400> 417
ggccgcgtcg accccaggtt ggacgatcct acgtgatgat ttcatgatgg gagcatctat 60
gaaagactgg gacaaggaaa gtgatgggcc agatgacagc agaccagaat ctgcaagtga 120
ctctgataca taaagcatca taggaaatac aattgcagtc gttttatttt ttctagaaaa 180
atatgtcatc ctctgatagt tggggaatta taaggatacc atttgtaaga aagccaaaag 240
acttttgcca gatttcatat ttcccctttt catgtacact ttatatatac ttcattaaaa 300
ttatatttta aacccttgta taattttaag cattgttcct cagaacattt gtaaaaggat 360
atatttctgc ttgaccagcg agatgtgcat tttgccagga tcatattggt catgtctatt 420
ggtgtattat ttcagtatca ccaatgtttt cagaaataca gtactaattc atcattaaac 480
tctttgaagt taatattttt ctgccttcta acttatagac tc 522

<210> 418
<211> 567
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 486, 493, 560
<223> n = A,T,C or G

<400> 418
ggccgcgtcg acgcaaagcc tgagtcctgt cctttctctc tcccggaca gcatgagctt 60
caccactcgc tccaccttct ccaccaacta ccggtccctg ggctctgtcc aggcgcccag 120
ctacggcgcc cggccggtca gcagcgcggc cagcgtctat gcaggcgctg ggggctctgg 180
ttcccggatc tccgtgtccc gctccaccag cttcaggggc ggcatggggt ccgggggcct 240

ggccaccggg atagccgggg gtctggcagg aatgggaggc atccagaacg agaaggagac 300
catgcaaagc ctgaacgacc gcctggcctc ttacctggac agagtgagga gcctggagac 360
cgagaaccgg aggctggaga gcaaaatccg ggagcacttg gagaagaagg gaccccaggt 420
cagagactgg agccattact tcaagatcat cgaggacctg agggctcaga tcttcgcaaa 480
tactgnggac aantgcccgc atcgttctgc agattgacaa tgcccgtctt gctgctgatg 540
actttagagt caagtatgan acagagc 567

<210> 419
<211> 60
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 54
<223> n = A,T,C or G

<400> 419
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt tttnccgggg 60

<210> 420
<211> 521
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 24, 26, 250, 363, 398, 441
<223> n = A,T,C or G

<400> 420
ggccgccctt tttttttttt tttnanaaaa gccagttttt ttttatttgt aaagctctgc 60
cataaacttc tagcgtgtgc caatggtcac ctgccacact cgcaccaggt tgtccgtgta 120
gccagcaaac agagtctggc catcagcaga ccaggccagg gaggtgcact ggggtggttc 180
tgccttgctg ctggtactga taacttcttg cttcagttca tctacaatga tctttccctc 240
taaatcccan atcttgatgc tggggcctgt ggcagcacac agccagtagc ggttagggct 300
gaagcacagg gcgttgatga tgtccccacc atctagcgtg taaaggtgtt tgccttcgtt 360
ganatcccat aacatggcct ggccatcctt gcctccanaa gcacagaggg atccatctgg 420
agagacagtc accgtgttca natagcctgt gtggccaatg tggttggtct tcagcttgca 480
gttagccagg ttccatacct tgaccagctt gtcccagcca c 521

<210> 421
<211> 545
<212> DNA
<213> Homo sapiens

<400> 421
ggccgcgtcg accagaattt cggtggtgca ggccctggtt ctgacccaac agtatcacca 60
actcaaatca atagatccag aaaaagtaga atcgcgtaaa taaaagattt tattcagttt 120
ccagaaagag gggggaatga aagaccccac cataaggctt agcaagctag ctgcagtaac 180
gccattttgc aaggcatgaa aaagtaccag agctgagttc tcaaaagtca caaggaagtt 240
tagttaaaga ataaggctga acaaaactgg gacaggggcc aaacaggata tctgtggtcg 300
agcacctggg ccccggctca gggccaagaa cagatggtac tcagataaag cgaaactagc 360
aacagtttct ggaaagtccc acctcagttt caagttcccc aaaagaccgg gaaaaacccc 420
aagccttatt taaactaacc aatcagctcg cttctcgctt ctgtaaccgc gctttttgct 480
ccccagccct ataaaaaggg taaaaacccc acactcggtg cgccagtcat ccgatagact 540
gagtc 545

<210> 422
<211> 617
<212> DNA

<213> Homo sapiens

<220>
<221> misc_feature
<222> 178
<223> n = A,T,C or G

<400> 422
ggccgccctt tttttttttt tttacttttt aaatggtttt attttatgta caaataatga 60
acatacgttg tacccataaa ttctactttc caaaaacagg agctttttaa aagaaaacca 120
cataacaact tttaaaaggc gctgggattc ctctgcttct agatcaatgc tgggctanaa 180
aagtaaagtc tgttctatca ggaatcacaa gttggaactg agtattctcc aaagtggaaa 240
ttctagagtg tagtgtcact ccaggcaaag attattcagt tctcatcccc agcatccaca 300
actacctatc agaagggtta aaccaggtca aaacagtcca gcataattag gcttcatcaa 360
acaatgtcat tatgctcttc taagatgcaa ataaaccaaa acaggaaata ctaaaataaa 420
aatatctgac actgccatac aaattgttag ttccttttttg tatccccccct tctataacat 480
taacaaaggg aatattttac tgcaaagaat attttatttt atacatcact agccatgaat 540
ttttgccatt agttactata caaatgctgc ctagtgccat tatccaaata gcacaaccat 600
tttacgtcca caattca 617

<210> 423
<211> 619
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 403
<223> n = A,T,C or G

<400> 423
ggccgcgtcg accaataggt tggacctttt aaagctgaag agtgttgtca ctagcatttt 60
tggtgtgaaa aatacagagc tggctgtctt ccatgatgaa acagaaatac aaaaccaaac 120
tgacttactg agtcttagtg gaaaaacact ttgtgtgact gcaggatcgg ctccctctct 180
gatcaacagt tctagtactc ttctttgtca gtatatcaac ctacagctcc tgaatgcaga 240
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gaatggactc acccaccaag gtcttctgta tgaagcagcc aaggtgtttg gccttcggag 360
caggaagcta aagctgtttc tgaatgagac ccaaacgcag ganattacag aagacatccc 420
cgtgaagact ttgaatatga agactgtgta tgtttctgtg ttaccaacaa cagcagactt 480
ctagcatgta cttatcaatg ttgttcggtc agcccttccc taattacacc tatcccctac 540
acatacatgc acatagacac acacatgaac acactgaaga tatttccttc aggtgtgtgt 600
aaaatatgct gcttggatt 619

<210> 424
<211> 645
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 564
<223> n = A,T,C or G

<400> 424
ggccgcgtcg acggctgctt agatgcgcca cggtttcggt agcgacggta gctctagccg 60
ggcctgagct gtgctagcac ctcccccagg agaccgttgc agtcggccag ccccttctc 120
cacggtaacc atgtgcgacc gaaaggccgt gatcaaaaat gcggacatgt cggaagagat 180
gcaacaggac tcggtggagt gcgctactca ggcgctggag aaatacaaca tagagaagga 240
cattgcggct catatcaaga aggaatttga caagaagtac aatcccacct ggcattgcat 300
cgtggggagg aacttcggta gttatgtgac acatgaaacc aaacacttca tctacttcta 360
cctgggccaa gtggccattc ttctgttcaa atctggttaa aagcatggac tgtgccacac 420
acccagtgat ccatccaaaa acaaggactg cagcctaaat tccaaatacc agagactgaa 480

```
attttcagcc ttgctaaggg aacatctcga tgtttgaacc tttgttgtgt tttgtacagg 540
gcattctctg tactagtttg tcgnggttat aaaacaatta gcagaatagc ctacatttgt 600
atttattttc tattccatac ttctgcccac gttgttttct ctcaa                 645
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<210> 425
<211> 521
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 104, 122, 273, 275, 285, 326, 382, 411, 426, 445, 465, 512
<223> n = A,T,C or G

<400> 425

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ggccgcccctt ttttttttt tttttatcaa aacagggtct tagtctagct tatccttgag 60
tttggagttc taacatactc caattttgcc catacttgtg tgtncataag aaaatgagaa 120
anggaagata aagaaaaatt acacacaaaa ttatttaagt catatttata aaaaaatgtt 180
ccctcctttc aagccctaga tttggaaagt aagcaaggaa aagagggaac agtctagcta 240
ggaaaagagg gaagagtcag ttggtgaatc canantataat gtttngggac tcctgaaaaa 300
ttaaattttt tataccacat aaagtnctta gggataaaag ggaaataata aactagaaga 360
ggccagttaa cagttatacg tnccctcact ctaaaagagg aacatcaaat nttaaaagga 420
ttcaanaaca gtgaacagga cattnttcct gagttattat tcagngacta aaacatgcat 480
ttacatctgc tcccttaggt aagtcctaaa anactctttt t                     521
```

<210> 426
<211> 525
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 83, 434, 468, 477
<223> n = A,T,C or G

<400> 426

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ggccgccctt ttttttttt tttgttatcc aaactgagta atttattgct ggtctgaggc 60
ttgccttgtt tacacttaag tanaatttac gttgtttcca caaatggcag atatcaacat 120
ttaaaggaat ttaatagtga cctattcaat aaggcaatca tcttggtagc aaacttttat 180
ttaaatctta cataactcaa gctttataaa aagccaacat aattgaaaat tgggttctcc 240
ctctaaagcc ttaagtattc aaagctcaaa acagttaatt taaaaataag caaacaaata 300
aaacaaaaaa accctgccag cagatcctgc tgaaatacta aaaaaaaaaa aaacaacact 360
aaatgagctt aatctttaca aaagttacgt tagctcaaaa gctataaaat caaagttatc 420
ttaattctac aaanaaggga gagggtcttc atgccaccat ttccttanag cctcatnttt 480
ttcatccaat ttggccacaa atcaaatttc tgtgtgcccc tgttt                 525
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<210> 427
<211> 600
<212> DNA
<213> Homo sapiens

<400> 427

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ggccgcgtcg acggcggcag ccatcaggta agccaagatg ggtgcataca agtacatcca 60
ggagctatgg agaaagaagc agtctgatgt catgcgcttt cttctgaggg tccgctgctg 120
gcagtaccgc cagctctctg ctctccacag ggctccccgc cccacccggc ctgataaagc 180
gcgcccgactg ggctacaagg ccaagcaagg ttacgttata tataggattc gtgttcgccg 240
tggtggccga aaacgcccag ttcctaaggg tgcaacttac ggcaagcctg tccatcatgg 300
tgttaaccag ctaaagtttg ctcgaagcct tcagtccgtt gcagaggagc gagctggacg 360
ccactgtggg gctctgagag tcctgaattc ttactgggtt ggtgaagatt ccacatacaa 420
atttttgag gttatcctca ttgatccatt ccataaagct atcagaagaa atcctgacac 480
ccagtggatc accaaaccag tccacaagca cagggagatg cgtgggctga catctgcagg 540
ccgaaagagc cgtggccttg gaaagggcca caagttccac cacactattg gtggctctcg 600
```

<210> 428
<211> 100
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 84, 91, 92, 94, 95
<223> n = A,T,C or G

<400> 428
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 60
tttttttttt tttttttttt tttngggggg nncnncccca 100

<210> 429
<211> 563
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 51, 65, 215, 239, 278, 318, 370, 425, 445, 452, 460, 522,
533
<223> n = A,T,C or G

<400> 429
ggccgccctt tttttttttt ttttgttttt tttttttttc ttctctggaa natacattgc 60
tcctntttga gatggcaggg aaaagggacc ggaagttggg gtaggaggct ttattctttt 120
ggcagatcct ctcagtcatt atagatattg ctgcactgtt aataaaaaat atatgcttct 180
ctgtaaagca ttaaaaaaaa aaatccaagg atganatggc tgagttctca gctcaagtnt 240
ctccaaatac attgctgtcc attccctgac ctttccgngt gttatttctt ggttgttttc 300
cggatcaatg ccattctntg tttgtgagct tctgtggtgc aagctttttt gtagggtcgg 360
atttcttcan agccaaatcc tgggatccac atgttccact ggcgctctaa atgcagctgg 420
acatntttca cctccagggt gctanacttg cnatgccgcn caagctgaca ggctgctgtc 480
accacactct cgataaaatc atcagcaatc tgcagcagca tntcctccac atnttcatcc 540
aactgctcat taggatccac ttc 563

<210> 430
<211> 520
<212> DNA
<213> Homo sapiens

<400> 430
ggccgcgtcg acctacccct aaaagccaaa atgggaaagg aaaagactca tatcaacatt 60
gtcgtcattg gacacgtaga ttcgggcaag tccaccacta ctggccatct gatctataaa 120
tgcggtggca tcgacaaaag aaccattgaa aaatttgaga aggaggctgc tgagatggga 180
aagggctcct tcaagtatgc ctgggtcttg gataaactga aagctgagcg tgaacgtggt 240
atcaccattg atatctcctt gtggaaattt gagaccagca agtactatgt gactatcatt 300
gatgccccag gacacagaga ctttatcaaa aacatgatta cagggacatc tcaggctgac 360
tgtgctgtcc tgattgttgc tgctggtgtt ggtgaatttg aagctggtat ctccaagaat 420
gggcagaccc gagagcatgc ccttctggct tacacactgg gtgtgaaaca actaattgtc 480
ggtgttaaca aaatggattc cactgagcca ccctacagcc 520

<210> 431
<211> 491
<212> DNA
<213> Homo sapiens

<400> 431
ggccgcgtcg acggccgagc aggaggcgcc atcatgggag tggacatccg ccataacaag 60

gaccgaaagg ttcggcgcaa ggagcccaag agccaggata tctacctgag gctgttggtc 120
aagttataca ggtttctggc cagaagaacc aactccacat tcaaccaggt tgtgttgaag 180
aggttgttta tgagtcgcac caaccggccg cctctgtccc tttcccggat gatccggaag 240
atgaagcttc ctggccggga aaacaagacg gccgtggttg tggggaccat aactgatgat 300
gtgcgggttc aggaggtacc caaactgaag gtatgtgcac tgcgcgtgac cagccgggcc 360
cgcagccgca tcctcagggc aggggggcaag atcctcactt tcgaccagct ggccctggac 420
tcccctaagg gctgtggcac tgtcctgctc tccggtcctc gcaagggccg agaggtgtac 480
cggcatttcg g 491

<210> 432
<211> 231
<212> DNA
<213> Homo sapiens

<400> 432
ggccgcgtcg accggcagcc atcaggtaag ccaagatggg tgcatacaag tacatccagg 60
agctatggag aaagaagcag tctgatgtca tgcgctttct tctgagggtc cgctgctggc 120
agtaccgcca gctctctgct ctccacaggg ctccccgccc cacccggcct gataaagcgc 180
gccgactggg ctacaaggcc aagcaaggtt acgttatata taggattcgt g 231

<210> 433
<211> 696
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 516, 631, 690
<223> n = A,T,C or G

<400> 433
ggccgccctt tttttttttt ttttaatgaa tccacttcct ttattgcagt aacctctgta 60
caaagcagca actgcaatac tcaaggttaa aacattagaa aagcatttgt gtgacaggta 120
tattacagta ttatcaaaat attacatttt cagacttact tagcagataa tcatccacca 180
gagcttaaat ctttaaatta tttccatagt cttaaaaaat atgtaatgtc agaatgcata 240
taaaaagaat gtaaaaggaa acctaaaata caaatggaat aatgtaacaa ataaatattt 300
gatttcagta actgttaata atcagctcaa caccaccatt ctctctaaac tcaatttaat 360
tcttatagga ataatgaact gtcaaatgcc atggcataat tatttatttc caagctatca 420
tcaatgatta gaactaaaaa aaatttggca taaaaaaatc acaattcagc ataaataaag 480
ctatttttag cttcaacact agctagcatc tctaanaatt gttgaaataa gtactataac 540
cttgaaaatt ttcgacctgg tgtctagtgt taagtgaaag taatgcattt tttttaagtg 600
aaaagcttct tacattattt cacagacagt nttacccacc ccacattatg aatagttaga 660
tatattttat gtactttata cccacatgtn tgacgc 696

<210> 434
<211> 573
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 302, 356
<223> n = A,T,C or G

<400> 434
ggccgccctt tttttttttt tttttgtttg aaattcaagt aactttattt aaattcaaaa 60
acaattctta aaactgcatt tagagtcaag acccttttgt attataaaaa tcacaagtat 120
ttctaagaga caaaaatact tctaggttaa ctagaccaga tctgactttg gactttattc 180
tttaaacaaa ttgcagagaa tagagaaaaa aataggttat ttacagaaaa caatatctac 240
atatgtactt agaggtacaa atttggtgac agaaaagact tcagtatatg ctggcatctt 300
anaagcagtt ctcaaagagc ttagttttat tttcttgaat tttaagaatg cctaanatcc 360
ttcttcatcc tcgatcttgg gagccaagta gtattttaag tgtcccatat ccgcaatttt 420

atactctaca acaaggggta catctgcaga catactgagt gtcaccgttg aagagagtgg 480
agtggctttt gtaaagaagt tcaggtacct cagtgcaaaa gttagttgaa ctggttcatt 540
catctctatg gtaacagctt cctcctcttt atc 573

<210> 435
<211> 597
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 29, 573
<223> n = A,T,C or G

<400> 435
ggccgccctt tttttttttt ttttaattng gaacacaaat gctttattta agggtgcatc 60
acaattcccg tgtggtgagc aaaaaataaa ataaaggagc agatcgtagc acaccattcc 120
cactggccaa gtggttgaac cctgcatcca agacccagtg agcagccaag tgaggtgcaa 180
cctctgggcc tctcactcat gactccaaca gaattagcac attgcccttg tgcatggggc 240
cttttacatt gcagattttg gagcagcaag acaatgtata tctgttcgta actcttgttc 300
ttccctcctg atttttaaaa ctgcgtaatt ataaaactat gttgatggac atataattat 360
tataaagatg tagtttgtga caataacagc atgggcagaa tgaaggcata tagagcaaat 420
ttttcattac tgaaattaag ttgagattaa tctgaaacag ataaaacaga ctagttttac 480
aacctcctgt aataaaaacg ctgtctttta aaacaaatta tctattgcac ttttttgttt 540
taggtgtcac agctatgaaa gctttgtcta ganaattatc acaaatactt acatttt 597

<210> 436
<211> 430
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 93, 396, 417
<223> n = A,T,C or G

<400> 436
ggccgccctt tttttttttt tttaggacat tacctttatt tatgacttag gtgaaacatg 60
aaacacagga gaccagactg ttccaaacct aanaacaagg cttatttaaa acaaaacaaa 120
acaaacaaac aaaaaaaaag aaaaacaaac aaatatacgg aaatcaccaa ctataaatca 180
tatgctaaaa ccaaataaaa tgccagtata tccatacatt aaaaataacc aaattccttg 240
aaacttacct ttccttaacc ctttaataat aatctaccct aacttttcct ccctgctctg 300
aatctctata acacactttc tataattcat actgcacttc tttatattat ctatattgtt 360
tttatgcaga caagcattaa ttatatctca aactanacag taggttcctt tgagganaag 420
aggtcgacgc 430

<210> 437
<211> 464
<212> DNA
<213> Homo sapiens

<400> 437
ggccgcgtcg acggctggtt cccgtcatct tcgggagccg tggaggtacg aacttaagac 60
atgcctattt tattaattta cttccaaacg caacgaaagg tccatggaca atttgtgggc 120
catttaattc agggccccca attcgtacgt ggagaagtgg gaatgcaaaa gtactttgac 180
ctttaacctt cggtccggcg cggtggaggg aaacgcctcc gtctctatat aaggaatttt 240
ccggtctctt cgggtccttt ttcctctctt cagcgtgggg cgcccacaat ttgcgcgctc 300
tctttctgct gctccccagc tctcggatac agccgacacc atgggtttcg gagacctgaa 360
aagccctgcc ggcctccagg tgctcaacga ttacctggcg gacaagagct acatcgaggg 420
gtatgtgcca tcacaagcag atgtggcagt atttgaagcc gtgt 464

<210> 438

<211> 561
<212> DNA
<213> Homo sapiens

<400> 438
ggccgcgtcg acccgctcct ggtgctgctt gtgtgctcgt ttggtgcgga cctggtacct 60
cttttgtgaa gcggcagctg aggagactcc ggcgctcgcc atggccgacg aaaagcccaa 120
ggaaggagtc aagactgaga acaacgatca tattaatttg aaggtggcgg ggcaggatgg 180
ttctgtggtg cagtttaaga ttaagaggca tacaccactt agtaaactaa tgaaagccta 240
ttgtgaacga cagggattgt caatgaggca gatcagattc cgatttgacg ggcaaccaat 300
caatgaaaca gacacacctg cacagttgga aatggaggat gaagatacaa ttgatgtgtt 360
ccaacagcag acgggaggtg tctactgaaa agggaacctg cttctttact ccagaactct 420
gttctttaaa gaccaagatt acattctcaa ttagaaaact gcaatttggt tccaccacat 480
cctgactact accgtatagt tttctctatt ctttcatttc cccttcccc attcctttat 540
tgtacataaa gtaactggta t 561

<210> 439
<211> 528
<212> DNA
<213> Homo sapiens

<400> 439
ggccgcgtcg acgcgggcgg ccggctaggg tggaagagcc gggcgagcag agctgcgctg 60
cgggcgtcct gggaagggag atccggagcg aatagggggc ttcgcctctg gcccagccct 120
cccgctgatc ccccagccag cggtccgcaa cccttgccgc atccacgaaa ctttgcccat 180
agcagcgggc gggcactttg cactggaact tacaacaccc gagcaaggac gcgactctcc 240
cgacgcgggg aggctattct gcccatttgg ggacacttcc ccgccgctgc caggacccgc 300
ttctctgaaa ggctctcctt gcagctgctt agacgctgga ttttttcgg gtagtggaaa 360
accagcagcc tcccgcgacg atgcccctca acgttagctt caccaacagg aactatgacc 420
tcgactacga ctcggtgcag ccgtatttct actgcgacga ggaggagaac ttctaccagc 480
agcagcagca gagcgagctg cagccccgg cgcccagcga ggatatct 528

<210> 440
<211> 503
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 488, 491
<223> n = A,T,C or G

<400> 440
ggccgcgtcg accaaaacac caaatggcgg atgacgccgg tgcagcgggg gggcccgggg 60
gccctggtgg ccctgggatg gggaaccgcg gtggcttccg cggaggtttc ggcagtggca 120
tccggggccg gggtcgcggc cgtggacggg gccgggggccg aggccgcgga gctcgcggag 180
gcaaggccga ggataaggag tggatgcccg tcaccaagtt gggccgcttg gtcaaggaca 240
tgaagatcaa gtccctggag gagatctatc tcttctccct gcccattaag gaatcagaga 300
tcattgattt cttcctgggg gcctctctca aggatgaggt tttgaagatt atgccagtgc 360
agaagcagac ccgtgccggc cagcgcacca ggttcaaggc atttgttgct atcggggact 420
acaatggcca cgtcggtctg ggtgttaagt gctccaagga ggtggccacc gccatccgtg 480
gggccatnat nctggccaag ctc 503

<210> 441
<211> 559
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 50, 260, 262, 301, 534, 545
<223> n = A,T,C or G

<400> 441
ggccgccctt tttttttttt tttcctgtgc acaggtccca tttattgtan aaaataataa 60
taattacagt gatgaatagc tcttcttaaa ttacaaaaca gaaaccacaa agaaggaaga 120
ggaaaaaccc caggacttcc aagggtgaag ctgtcccctc ctccctgcca ccctcccagg 180
ctcattagtg tccttggaag gggcagagga ctcagagggg atcagtctcc aggggccctg 240
ggctgaagcg ggtgaggcan anagtcctga ggccacagag ctgggcaacc tgagccgcct 300
ntctggcccc ctcccccacc actgcccaaa cctgtttaca gcaccttcgc ccctcccctc 360
taaacccgtc catccactct gcacttccca ggcaggtggg tgggcaaggc ctcagccata 420
ctcctgggcg cgggtttcgg tgagcaaggc acagtcccag aggtgatatc aaggcctacc 480
cgcaacagag gagatgcagg cagacagagt ggggaaaatg taaatgggga cagnggccaa 540
caccngatgc aggcagatc 559

<210> 442
<211> 498
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 461
<223> n = A,T,C or G

<400> 442
ggccgcgtcg acgtggcgcc gacaggatgg gcaagtgtcg tggacttcgt actgctagga 60
agctccgtag tcaccgacga gaccagaagt ggcatgataa acagtataag aaagctcatt 120
tgggcacagc cctaaaggcc aacccttttg gaggtgcttc tcatgcaaaa ggaatcgtgc 180
tggaaaaagt aggagttgaa gccaaacagc caaattctgc cattaggaag tgtgtaaggg 240
tccagctgat caagaatggc aagaaaatca cagcctttgt acccaatgac ggttgcttga 300
actttattga ggaaaatgat gaagttctgg ttgctggatt tggtcgcaaa ggtcatgctg 360
ttggtgatat tcctggagtc cgctttaagg ttgtcaaagt agccaatgtt tctcttttgg 420
ccctatacaa aggcaagaag gaaagaccaa gatcataaat nttaatggtg aaaacactgt 480
agtaataaat tttcatat 498

<210> 443
<211> 525
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 40, 44, 134, 141, 165, 171, 181, 202, 282, 332, 336, 342,
351, 387, 389, 392, 401, 424, 437, 467, 489
<223> n = A,T,C or G

<400> 443
ggccgccctt tttttttttt tttttttttt ttctcctttn aaanaattta ttaagcctgt 60
tataccacac agtatgtttt atacactgac atacaactcc ctaataagat aaagcaaaga 120
caaaaaagtt tatnttatta naaacaagat acaccaccac ttatngtctt naaacattat 180
ngcactttaa ctttcttaat tngacaaagc attcaagaaa catctgcaga ctagttttaa 240
cagacaaata acacctgtaa gcagacatga ctgtcctaaa tngtttatta agtatgaatt 300
ttacaaactt tacttatatt agcggtaacg gngganctgg anagtattgc nccttctcca 360
agctgcccgg cgagagccac caatagngng gnggaacttg nggccctttc caaggccacg 420
gctntttcgg cctgcanatg tcagcccacg catctccctg tgcttgngga ctggtttggt 480
gatccactng ggtgtcagga tttcttctga tagctttatg gaatg 525

<210> 444
<211> 520
<212> DNA
<213> Homo sapiens

<220>

<221> misc_feature
<222> 47, 104, 338, 470, 476
<223> n = A,T,C or G

<400> 444
ggccgccctt tttttttttt ttttcgtttt gctttatttt attctgngaa aataagcctt 60
attataaatc acaatgaaat ccacaaacca aaccccaaac tctntagcaa aacaagaccc 120
ccttgatgta taaagtcatc gctgacagga cagtcttttt cagttattgc ttttgtcgct 180
tgtttcttga gaacatgact ccaataaggc tcatggctgc caagcccatt cctgcaacgc 240
ttgcagcgat gatgacatct ctgacctggt cactgcgggc gactccatag cgcagctcat 300
tcacaaagtg ctcgcagttc tcactggtca gcttgtanag cacctcctgc cccaccagct 360
cctccgcccg ctggatgatt ttgctgcagg gcagcggcga gtacttgtca tcatgtttgt 420
tgttgacctg gtacttgtca ctcccggcca catcatacag caattccttn ttcacnatgg 480
ccttgtcagt cagggcggac atgacactgg ctgcaccagc 520

<210> 445
<211> 564
<212> DNA
<213> Homo sapiens

<400> 445
ggccgcgtcg acgacgctac ttcccctatc atagaagagc ttatcacctt tcatgatcac 60
gccctcataa tcattttcct tatctgcttc ctagtcctgt atgccctttt cctaacactc 120
acaacaaaac taactaatac taacatctca gacgctcagg aaatagaaac cgtctgaact 180
atcctgcccg ccatcatcct agtcctcatc gccctcccat ccctacgcat cctttacata 240
acagacgagg tcaacgatcc ctcccttacc atcaaatcaa ttggccacca atggtactga 300
acctacgagt acaccgacta cggcggacta atcttcaact cctacatact tcccccatta 360
ttcctagaac caggcgacct gcgactcctt gacgttgaca atcgagtagt actcccgatt 420
gaagccccca ttcgtataat aattacatca caagacgtct tgcactcatg agctgtcccc 480
acattaggct taaaaacaga tgcaattccc ggacgtctaa accaaaccac tttcaccgct 540
acacgaccgg gggtatacta cggt 564

<210> 446
<211> 577
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 537
<223> n = A,T,C or G

<400> 446
ggccgcgtcg accccctccc cccgagcgcc gctccggctg caccgcgctc gctccgagtt 60
tcaggctcgt gctaagctag cgccgtcgtc gtctcccttc agtcgccatc atgattatct 120
accgggacct catcagccac gatgagatgt tctccgacat ctacaagatc cgggagatcg 180
cggacgggtt gtgcctggag gtggaggggа agatggtcag taggacagaa ggtaacattg 240
atgactcgct cattggtgga aatgcctccg ctgaaggccc cgagggcgaa ggtaccgaaa 300
gcacagtaat cactggtgtc gatattgtca tgaaccatca cctgcaggaa acaagtttca 360
caaaagaagc ctacaagaag tacatcaaag attacatgaa atcaatcaaa gggaaacttg 420
aagaacagag accagaaaga gtaaaacctt ttatgacagg ggctgcagaa caaatcaagc 480
acatccttgc taatttcaaa aactaccagt tctttattgg tgaaaacatg aatccanatg 540
gcatggttgc tctattggac taccgtgagg atggtgt 577

<210> 447
<211> 462
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 149, 194

<223> n = A,T,C or G

<400> 447
ggccgccctt tttttttttt tttttgactg tcctaaattg tttattaagt atgaatttta 60
caaactttac ttatattagc ggtaacggtg gagctggaga gtattgcgcc ttctccaagc 120
tgcccggcga gagccaccaa tagtgtggng gaacttgtgg ccctttccaa ggccacggct 180
ctttcggcct gcanatgtca gcccacgcat ctccctgtgc ttgtggactg gtttggtgat 240
ccactgggtg tcaggatttc ttctgatagc tttatggaat ggatcaatga ggataacctc 300
aaaaaatttg tatgtggaat cttcaccaac ccagtaagaa ttcaggactc tcagagcccc 360
acagtggcgt ccagctcgct cctctgcaac ggactgaagg cttcgagcaa actttagctg 420
gttaacacca tgatggacag gcttgccgta agttgcaccc tt 462

<210> 448
<211> 538
<212> DNA
<213> Homo sapiens

<400> 448
ggccgcgtcg acgccagatc tcagaggagc ctggctaagc aaaaccctgc agaacggctg 60
cctaatttac agcaaccatg agtacaaatg gtgatgatca tcaggtcaag gatagtctgg 120
agcaattgag atgtcacttt acatgggagt tatccattga tgacgatgaa atgcctgatt 180
tagaaaacag agtcttggat cagattgaat tcctagacac caaatacagt gtgggaatac 240
acaacctact agcctatgtg aaacacctga aaggccagaa tgaggaagcc ctgaagagct 300
taaaagaagc tgaaaactta atgcaggaag aacatgacaa ccaagcaaat gtgaggagtc 360
tggtgacctg ggcaactttt gcctggatgt attaccacat gggcagactg gcagaagccc 420
agacttacct ggacaaggtg gagaacattt gcaagaagct ttcaaatccc ttccgctata 480
gaatggagtg tccagaaata gactgtgagg aaggatgggc cttgctgaag tgtggagg 538

<210> 449
<211> 557
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 403, 427, 516, 542
<223> n = A,T,C or G

<400> 449
ggccgccctt tttttttttt ttttgtcgcc taggctggag tacagtcatg tgacttcggc 60
tcatggcaac ctccgctttc caggtttaag tgattctcgt ctcagcctcc tgagtagctg 120
ggactagaag catgtaccac cacacccggc taatttttgt atttttagta gcgacaaggt 180
ttcaccatgt tggccaggct gttcttaaac tcctgacctc aggtgacctg cccgcctcgg 240
cctcccaaag tgctgaaatt acaggcgtga gccacacctg gcctatgtct ctgtcttaaa 300
cagccctcaa attgctgacc ccttcattgg tggaacatcg agccctgttt tttactcagc 360
agggaactga gtacaagctg agctggcttc aggcagcccc canagcagcc ccttaccttt 420
aatgtanatt cggaagatgt catccttcac gtaggacatg gccattgtca attcctcgtc 480
actggaaaag gcaaccaagt ccccgtcctc atctanattg tttaaaagac agcacgtgag 540
cncccagggg ttctcag 557

<210> 450
<211> 139
<212> DNA
<213> Homo sapiens

<400> 450
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgagggggc 139

<210> 451
<211> 508

<212> DNA
<213> Homo sapiens

<400> 451
ggccgcgtcg acgcggtcgt aagggctgag gatttttggt ccgcacgctc ctgctcctga 60
ctcaccgctg ttcgctctcg ccgaggaaca agtcggtcag gaagcccgcg cgcaacagcc 120
atggctttta aggataccgg aaaaacaccc gtggagccgg aggtggcaat tcaccgaatt 180
cgaatcaccc taacaagccg caacgtaaaa tccttggaaa aggtgtgtgc tgacttgata 240
agaggcgcaa aagaaaagaa tctcaaagtg aaaggaccag ttcgaatgcc taccaagact 300
ttgagaatca ctacaagaaa aactccttgt ggtgaaggtt ctaagacgtg ggatcgtttc 360
cagatgagaa ttcacaagcg actcattgac ttgcacagtc cttctgagat tgttaagcag 420
attacttcca tcagtattga gccaggagtt gaggtggaag tcaccattgc agatgcttaa 480
gtcaactatt ttaataaatt gatgacca 508

<210> 452
<211> 76
<212> DNA
<213> Homo sapiens

<400> 452
ggccgcgtcg accgggtacc cgtgttccca ataaagcctt ttgctgtttg catccgaaaa 60
aaaaaaaaaa aagggc 76

<210> 453
<211> 555
<212> DNA
<213> Homo sapiens

<400> 453
ggccgcgtcg acagcggctg ccgaagatgg cggaggtgca ggtcctggtg cttgatggtc 60
gaggccatct cctgggccgc ctggcggcca tcgtggctaa acaggtactg ctgggccgga 120
aggtggtggt cgtacgctgt gaaggcatca acatttctgg caatttctac agaaacaagt 180
tgaagtacct ggctttcctc cgcaagcgga tgaacaccaa cccttcccga ggcccctacc 240
acttccgggc ccccagccgc atcttctggc ggaccgtgcg aggtatgctg ccccacaaaa 300
ccaagcgagg ccaggccgct ctggaccgtc tcaaggtgtt tgacggcatc ccaccgccct 360
acgacaagaa aaagcggatg gtggttcctg ctgccctcaa ggtcgtgcgt ctgaagccta 420
caagaaagtt tgcctatctg ggcgcctgg ctcacgaggt tggctggaag taccaggcag 480
tgacagccac cctggaggag aagaggaaag agaaagccaa gatccactac cggaagaaga 540
aacagctcat gaggc 555

<210> 454
<211> 532
<212> DNA
<213> Homo sapiens

<400> 454
ggccgcgtcg actggccact gcgcagacca gacttcgctc gtactcgtgc gcctcgcttc 60
gcttttcctc cgcaaccatg tctgacaaac ccgatatggc tgagatcgag aaattcgata 120
agtcgaaact gaagaagaca gagacgcaag agaaaaatcc actgccttcc aaagaaacga 180
ttgaacagga gaagcaagca ggcgaatcgt aatgaggcgt gcgccgccaa tatgcactgt 240
acattccaca agcattgcct tcttatttta cttcttttag ctgtttaact ttgtaagatg 300
caaagaggtt ggatcaagtt taaatgactg tgctgcccct ttcacatcaa agaactactg 360
acaacgaagg ccgcgcctgc ctttcccatc tgtctatcta tctggctggc agggaaggaa 420
agaacttgca tgttggtgaa ggaagaagtg gggtggaaga agtggggtgg gacgacagtg 480
aaatctagag taaaaccaag ctggcccaag gtgtcctgca ggctgtaatg ca 532

<210> 455
<211> 483
<212> DNA
<213> Homo sapiens

<220>

<221> misc_feature
<222> 423
<223> n = A,T,C or G

<400> 455
ggccgcgtcg accgttcgtg tctgttgaac ggctgtgggc gtcttgctgc cttgggtagg 60
gggttaaaat cgttcttgag aggaacgtct ctgtgcgaag agataatgag tttagctctg 120
agaagtgagc ttgtagtgga caaaacaaag aggaaaaaaa gaagagaact gtctgaggaa 180
cagaaacaag aaattaaaga tgcttttgaa ctatttgata cagacaaaga tgaagcaata 240
gattatcatg aattaaaggt ggcaatgaga gccttggggt ttgatgtaaa aaaagctgat 300
gtactgaaga ttcttaaaga ttatgacaga gaagccacag ggaaaatcac ctttgaagat 360
tttaatgaag ttgtgacaga ctggatattg gaaagagatc cccatgaaga aatactcaag 420
gcntttaaac tatttgatga tgatgattca ggtaaaataa gcttgaggaa tttgcgacgt 480
gtt 483

<210> 456
<211> 550
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 162, 178, 235, 337
<223> n = A,T,C or G

<400> 456
ggccgccctt tttttttttt tttacttttt aaatggtttt attttatgta caaataatga 60
acatacgttg tacccataaa ttctactttc caaaaacagg agctttttaa aagaaaacca 120
cataacaact tttaaaaggc gctgggattc ctctgcttct anatcaatgc tgggctanaa 180
aagtaaagtc tgttctatca ggaatcacaa gttggaactg agtattctcc aaagnggaaa 240
ttctagagtg tagtgtcact ccaggcaaag attattcagt tctcatcccc agcatccaca 300
actacctatc agaagggtta aaccaggtca aaacagncca gcataattag gcttcatcaa 360
acaatgtcat tatgctcttc taagatgcaa ataaaccaaa acaggaaata ctaaaataaa 420
aatatctgac actgccatac aaattgttag ttcctttttg tatcccccct tctataacat 480
taacaaaggg aatattttac tgcaaagaat attttatttt atacatcact agccatgaat 540
ttttgccatt 550

<210> 457
<211> 493
<212> DNA
<213> Homo sapiens

<400> 457
ggccgcgtcg acaaacagca taccagcagt ataaaatgta caagaaatat tagggaggca 60
agctggaatt gacaatgaga agatttgaaa agggaccttt gataagttgt cttgtctggt 120
ggttggtttg tttgttaaat ctgtgttggt ctgtgggtct cagaatctgc aagttctact 180
ttcagctgct cttaaataaa ctaacagact tactcttcaa ataattagat agttacaaaa 240
aaccccagca aatccccatc acattaatgg ggggaaaaca cttcttattt ataaattcat 300
gctatataaa atttcctata atagagtatg caatgtctgg cccatactag tactccaata 360
atagcctttg ttattgaaga aaaattacag agaatcactt gtttgcagac tgcattcaga 420
attgtcatta ggtttctgta gtctaggcag aatcatcgta aatgaatgaa ataacatatc 480
aagaaagaga ttc 493

<210> 458
<211> 438
<212> DNA
<213> Homo sapiens

<400> 458
ggccgcgtcg acccaggatc tcgggctcgg aacgagactg cacggattgt tttaagaaaa 60
tggcagacaa accagacatg gggaaaatcg ccagcttcga taaggccaag ctgaagaaaa 120
cggagacgca ggagaagaac accctgccga ccaaagagac cattgagcag gagaagcgga 180

gtgaaatttc ctaagatcct ggaggatttc ctaccccgt cctcttcgag accccagtcg 240
tgatgtggag gaagagccac ctgcaagatg gacacgagcc acaagctgca ctgtgaacct 300
gggcactccg cgccgatgcc accggcctgt gggtctctga agggaccccc ccccaatcgg 360
actgccaaat tctccggttt gccccgggat attatagaaa attatttgta tgaataatga 420
aaataaaaca cacctcgt 438

<210> 459
<211> 293
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 55, 213, 214, 239, 273, 286
<223> n = A,T,C or G

<400> 459
ggccgcgtcg accaagcact caacctcacc agtcccgaca gaacccaaga gtgcntggct 60
gtgtctggta tcgggacccc cctactacga aggggttgcc gtcctaggta cctactccaa 120
ccatacctct gccccagcta actgctccgt ggcctcccaa cacaagctga ccctgtccga 180
agtgaccggg cagggactct gcgtaggagc agnncccaaa acccatcagg ccctgtgtnt 240
acccccagaa ggcgagcgac gggtcctact atntggctgc tcccgncggg acc 293

<210> 460
<211> 511
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 32, 126, 133, 157, 173, 194, 274, 324, 334, 343, 379, 381, 384, 393, 414, 416, 429, 459, 472
<223> n = A,T,C or G

<400> 460
ggccgccctt tttttttttt ttttctcctt tnaaagaatt tattaagcct gttataccac 60
acagtatgtt ttatacactg acatacaact ccctaataag ataaagcaaa gacaaaaaag 120
tttatnttat tanaaacaag atacaccacc acttatngtc ttcaaacatt atngcacttt 180
aactttctta attngacaaa gcattcaaga aacatctgca gactagtttt aacagacaaa 240
taacacctgt aagcagacat gactgtccta aatngtttat taagtatgaa ttttacaaac 300
tttacttata ttagcggtaa cggnggagct gganagtatt gcnccttctc caagctgccc 360
ggcgagagcc accaatagng nggnggaact tgnggccctt tccaaggcca cggntntttc 420
ggcctgcana tgtcagccca cgcatctccc tgtgcttgng gactggtttg gngatccact 480
gggtgtcagg atttcttctg atagctttat g 511

<210> 461
<211> 461
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 227, 266
<223> n = A,T,C or G

<400> 461
ggccgcgtcg accgctgccc gagcccgacg ctatgtccag caaaggctcc gtggttctgg 60
cctacagtgg cggcctggac acctcgtgca tcctcgtgtg gctgaaggaa caaggctatg 120
acgtcattgc ctatctggcc aacattggcc agaaggaaga cttcgaggaa gccaggaaga 180
aggcactgaa gcttggggcc aaaaaggtgt tcattgagga tgtcagnagg gagtttgtgg 240
aggagttcat ctggccggcc atccantcca gcgcactgta tgaggaccgc tacctcctgg 300
gcacctctct tgccaggccc tgcatcgccc gcaaacaagt ggaaatcgcc cagcgggagg 360

gggccaagta tgtgtcccac ggcgccacag gaaaggggaa cgatcaggtc cggtttgagc 420
tcagctgcta ctcactggcc ccccagataa aggtcattgc t 461

<210> 462
<211> 554
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 38, 169, 229, 278, 289, 292, 312, 329, 340, 368, 374, 414,
513, 537
<223> n = A,T,C or G

<400> 462
ggccgccctt tttttttttt ttttcttatg tacacaangg tttattaaag gaatgtatgg 60
cccacatcaa cctagcaagg attctactgg taaaccttcc tatggccaaa ggaaaaacaa 120
gcaggagttg agtggctggg gtggggtgca ggcaatggaa agagggcana agggtgtaaa 180
agctgaaggg gtctaaaagc ttactcctga gtttcttcct tctgtcttna aatctttact 240
tcttatggcc aaagacccag ctgtttcata ggctggaнat gcactcttnt anactgctcg 300
agacagccag anacagggga ggagggaana aggatactgn ggaaagggat ggcggggcaa 360
acatttanag ctanaagcca ctactgggcc aatgctaaag tttctgtctc taancctaaa 420
aaagccagtg tagtagggcc cttatcactc ttagtttgct aggtttcccc tctgaaataa 480
tgagcaaatt tagccaggct agcaaaaagg aanaggacgg ggctgtgcag gatttancaa 540
aatcttgatt cttg 554

<210> 463
<211> 588
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 519
<223> n = A,T,C or G

<400> 463
ggccgcgtcg acctcagaca tgaagaaagc agttctttgg tgccctccag ccggtctgca 60
agtgtcctca ggaagccact taatcgtctt gtagcaacag ttgtggattc cacctgcagg 120
agcagctgcc ggggtatgcc ggtccgtaac tccacctgca ggagcagctg ccggggtatg 180
ccggtccgta actccacgtc ttcctttgca gtatcaaata caagccccga gatggtatcc 240
aaaaggaaat ctccccatga attgttctgg taggtgctga tggtcacgtg agtcgagtgg 300
gccagccccg caggagtgtc cgcttgatga atggttcctc tgggaaagta caacaaatca 360
cccggcttca gcataaactc atgcaccggc ctgccgatcc tttcctcggc ctccacgctg 420
tactctcgtg ccaggggcac agtggggtgg tagaggcgcc agtgtttctc tccctccagc 480
tgcaggatga aaacctcgac atcatcataa tggggcggna ggccctgaga tcctgcggga 540
gttatgtaca cattcgagcc aaccaaggag ccaaagtaac attccagc 588

<210> 464
<211> 461
<212> DNA
<213> Homo sapiens

<400> 464
ggccgcgtcg accgcggtcg taagggctga ggatttttgg tccgcacgct cctgctcctg 60
actcaccgct gttcgctctc gccgaggaac aagtcggtca ggaagcccgc gcgcagcagc 120
catggctttt aaggataccg gaaaaacacc cgtggagccg gaggtggcaa ttcaccgaat 180
tcgaatcacc ctaacaagcc gcaacgtaaa atccttggaa aaggtgtgtg ctgacttgat 240
aagaggcgca aaagaaaaga atctcaaagt gaaaggacca gttcgaatgc ctaccaagac 300
tttgagaatc actacaagaa aaactccttg tggtgaaggt tctaagacgt gggatcgttt 360
ccagatgaga attcacaagc gactcattga cttgcacagt ccttctgaga ttgttaagca 420
gattacttcc atcagtattg agccaggagt tgaggtggaa g 461

<210> 465
<211> 549
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 97, 235, 247, 396, 467, 488
<223> n = A,T,C or G

<400> 465
ggccgccctt tttttttttt tttcggatgc aaacagcaaa aggctttatt gggaacacgg 60
gtacccgggc gactcagtct atcggatgac tggcgcnccg agtgtggggt ttttaccctt 120
tttatagggc tggggagcaa aaagcgcggt tacagaagcg agaagcgagc tgattggtta 180
gtttaaataa ggcttggggt ttttcccggt cttttgggga acttgaaact gaggngggac 240
tttccanaaa ctgttgctag tttcgcttta tctgagtacc atctgttctt ggccctgagc 300
cggggcccag gtgctcgacc acagatatcc tgtttggccc ctgtcccagt tttgttcagc 360
cttattcttt aactaaactt ccttgtgact tttganaact cagctctggt acttttttcat 420
gccttgcaaa atggcgttac tgcagctagc ttgctaagcc ttatggnggg gtctttcatt 480
ccccccctntt tctggaaact gaataaaatc ttttattcac gcgattctac ttcttctgga 540
tctattgat 549

<210> 466
<211> 620
<212> DNA
<213> Homo sapiens

<400> 466
ggccgcgtcg acaaaggttt cgcgtctccc agcgtccccg accggaagtc gcctcttggt 60
ctttgcgatc tttttctctg gctcaatttg ggctgattcc gtttgtgtcc gcaattccta 120
aatcgagttt cttgaaaaga gacactggtc ttaagggtta agacgaaaga tggcgggtga 180
aaaagttgag aagccagata ctaaagagaa gaaacccgaa gccaagaagg ttgatgctgg 240
tggcaaggtg aaaaagggta acctcaaagc taaaaagccc aagaagggga agccccattg 300
cagccgcaac cctgtccttg tcagaggaat tggcaggtat tcccgatctg ccatgtattc 360
cagaaaggcc atgtacaaga ggaagtactc agccgctaaa tccaaggttg aaaagaaaaa 420
gaaggagaag gttctcgcaa ctgttacaaa accagttggt ggtgacaaga acggcggtac 480
ccgggtggtt aaacttcgca aaatgcctag atattatcct actgaagatg tgcctcgaaa 540
gctgttgagc cacggcaaaa aacccttcag tcagcacgtg agaaaactgc gagccagcat 600
taccccccggg accattctga 620

<210> 467
<211> 599
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 489
<223> n = A,T,C or G

<400> 467
ggccgcgtcg acccgttgtg tgatcccatt ttaaacacgg ccagagcagt cttccaacaa 60
catagctcta atctagtttc atccccactt ttacatgctt cagtggcttt cccagtgact 120
tggcatggaa cacgtcctca gttgccatac attccagcta actcttaccc aacctttctt 180
tgttcacaca gtttcctttt ccttcctcat tgacccatcc gcatctctgt ttatccaaga 240
cttctctgtg atagctgacc cttagtcttt ctctccccta ttcctccaga ctagatcctg 300
tctccttcct gcagccccga cacagccttc agttcatatc ttttgcatga tgcttagcac 360
cttctatccc taaggacaac ttactcattt gagatttctg gcagggtacc ttgcatgcag 420
tggacactca gtatttgctg aattaaattc cttcctatgg atcccttctg atttttttaa 480
gtgcctctna tacacatatc attctagggc tcatgccact tttaatgtca ttttctaaag 540
gaaaatctta tctatgatat tttcccttat aagagatagt tgttttgagt agggttttt 599

<210> 468
<211> 570
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 175, 234, 403
<223> n = A,T,C or G

<400> 468
ggccgccctt tttttttttt tttagtttgg gatatgacct ttattgaact tatccaccag 60
agtggaaata atgtctgtac aaaaccaaat gtttgttact ataacttctg catcacaatt 120
aaaatccaaa cagtttttta aaaacagtca actcaatcaa aacccactac ttcanaatca 180
atagcttctt tgaagccaca gtaacactta aatatggtta agactcgaat gcanaaattt 240
ggttggttgg aaagctaatt aaacttccaa cttgctcaaa tagaattaca aaaaggcaaa 300
attgtgtttt tcacagagat acagtccact ggaatcacca acactggaca gctgttagag 360
tatttagagt cctgagataa caaggaatcc aggcatcctt tanacagtct tctgttgtcc 420
tttcttccca atcagagatt tgtggatgtg tggaatgaca ccaccaccag caattgtagc 480
cttgatgaga gaatccaatt cttcatctcc acgaatagca agttgcaagt gacgaggggt 540
aatacgcttt acctttaagt cttttgatgc 570

<210> 469
<211> 501
<212> DNA
<213> Homo sapiens

<400> 469
ggccgcgtcg acgccgccaa ggtgctcggt ccttccgagg aagctaaggc tgcgttgggg 60
tgaggccctc acttcatccg gcgactagca ccgcgtccgg cagcgccagc cctacactcg 120
cccgcgccat ggcctctgtc tccgagctcg cctgcatcta ctcggccctc attctgcacg 180
acgatgaggt gacagtcacg gaggataaga tcaatgccct cattaaagca gccggtgtaa 240
atgttgagcc tttttggcct ggcttgtttg caaaggccct ggccaacgtc aacattggga 300
gcctcatctg caatgtaggg gccggtggac ctgctccagc agctggtgct gcaccagcag 360
gaggtcctgc cccctccact gctgctgctc cagctgagga gaagaaagtg gaagcaaaga 420
aagaagaatc cgaggagtct gatgatgaca tgggctttgg tctttttgac taaacctctt 480
ttataacatg ttcaataaaa a 501

<210> 470
<211> 503
<212> DNA
<213> Homo sapiens

<400> 470
ggccgcgtcg acggccccgtg gcgccgacag gatgggcaag tgtcgtggac ttcgtactgc 60
taggaagctc cgtagtcacc gacgagacca gaagtggcat gataaacagt ataagaaagc 120
tcatttgggc acagccctaa aggccaaccc ttttggaggt gcttctcatg caaaaggaat 180
cgtgctggaa aaagtaggag ttgaagccaa acagccaaat tctgccatta ggaagtgtgt 240
aagggtccag ctgatcaaga atggcaagaa aatcacagcc tttgtaccca atgacggttg 300
cttgaacttt attgaggaaa atgatgaagt tctggttgct ggatttggtc gcaaaggtca 360
tgctgttggt gatattcctg gagtccgctt taaggttgtc aaagtagcca atgtttctct 420
tttggcccta tacaaaggca agaaggaaag accaagatca taaatattaa tggtgaaaac 480
actgtagtaa taaattttca tat 503

<210> 471
<211> 538
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature

<222> 46, 107, 223, 241, 272, 304, 503
<223> n = A,T,C or G

<400> 471
ggccgccctt tttttttttt tttttttttt ttgggtacca aatttnttta tttgaaggaa 60
tggtacaaat caaagaactt aagtggatgt tttggtacaa cttatanaaa aggtaaagga 120
aaccccaaca tgcatgcact gccttggtga ccagggaagt caccccacgg ctatggggaa 180
attagcccga ggcttagctt tcattatcac tgtctcccag ggngtgcttg tcaaagagat 240
nttccgccaa gccagattcg ggcgctccca tnttgcgcaa gttggtcacg tggtcaccca 300
attntttgat ggctttcacc tgctcattca ggtaatgtgt ctcaatgaag tcacacaaat 360
gggggtcatt tttgtcagtg gccagtttgt gcagttccag tagtgactga ttcacatttt 420
tttccaaatg taatgcacac tccattgcat tcagcccgct ctcccagtca tcacagtctg 480
gtttcttgat atcctgaagg aanattcggc cacctcgttg gttctgcagc ttcatcag 538

<210> 472
<211> 570
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 163, 236, 248, 289, 325, 382, 387, 397, 468, 489, 519, 560
<223> n = A,T,C or G

<400> 472
ggccgccctt tttttttttt ttttcggatg caaacagcaa aaggctttat tgggaacacg 60
ggtacccggg cgactcagtc tatcggatga ctggcgcacc gagtgtgggg tttttaccct 120
ttttataggg ctggggagca aaaagcgcgg ttacagaagc ganaagcgag ctgattggtt 180
agtttaaata aggcttgggg tttttcccgg tcttttgggg aacttgaaac tgaggnggga 240
ctttccanaa actgttgcta gtttcgcttt atctgagtac catctgttnt tggccctgag 300
ccggggccca ggtgctcgac cacanatatc ctgtttggcc cctgtcccag ttttgttcag 360
ccttattctt taactaaact tntttgngac ttttganaac tcagctctgg tactttttca 420
tgccttgcaa aatggcgtta ctgcagctag cttgctaagc cttatggngg ggtctttcat 480
tccccccntnt ttctggaaac tgaataaaat cttttattna cgcgattcta cttcttctgg 540
atctattgat ttgagttggn gatactgttg 570

<210> 473
<211> 100
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 25, 29, 45, 46, 86
<223> n = A,T,C or G

<400> 473
ggccgccctt tttttttttt tttcntgtnc cactgtcact attcnnaggt gggtttttga 60
gaatgaatgt gcaaaattta tgatgngtgt caagcatgcc 100

<210> 474
<211> 203
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 194
<223> n = A,T,C or G

<400> 474
ggccgcgtcg actttcaaat taatttgctt tcaaaatctg aaaaggaaaa aagtataatt 60

gtggtacaaa gaagacagat ctccaggctc tttcttctca gtttattttg gtttaattct 120
gtactggaga cttgaatagg atttgtgaac atggtgatgg aaagaaaaat agaggacatt 180
atttgtgtac cctnattcct gaa 203

<210> 475
<211> 557
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 550
<223> n = A,T,C or G

<400> 475
ggccgcgtcg acatggtgtt caggcgcttc gtggaggttg gccgggtggc ctatgtctcc 60
tttggacctc atgccggaaa attggtcgcg attgtagatg ttattgatca gaacagggct 120
ttggtcgatg gaccttgcac tcaagtgagg agacaggcca tgcctttcaa gtgcatgcag 180
ctcactgatt tcatcctcaa gtttccgcac agtgcccacc agaagtatgt ccgacaagcc 240
tggcagaagg cagacatcaa tacaaaatgg gcagccacac gatgggccaa gaagattgaa 300
gccagagaaa ggaaagccaa gatgacagat tttgatcgtt ttaaagttat gaaggcaaag 360
aaaatgagga acagaataat caagaatgaa gttaagaagc ttcaaaaggc agctctcctg 420
aaagcttctc ccaaaaaagc acctggtact aagggtactg ctgctgctgc tgctgctgct 480
gctgctgctg ctgctgctgc tgctgctgct gctgctaaag ttccagcaaa aaagatcacc 540
gccgcgagtn aaaaggc 557

<210> 476
<211> 136
<212> DNA
<213> Homo sapiens

<400> 476
ggccgcgtcg accttgagga atggagccct caacacaggt agccatccta atggatatgg 60
gttggttcct gttttctatt tggaacttta aaaaaaatta aagcaggttg cactgctgtg 120
atccatcctc atctcc 136

<210> 477
<211> 408
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 354, 378, 381
<223> n = A,T,C or G

<400> 477
ggccgcgtcg actgacgaag ggaacgtcat cgtttggaaa gcgtcgcaat aagacgcaca 60
cgttgtgccg ccgctgtggc tctaaggcct accaccttca gaagtcgacc tgtggcaaat 120
gtggctaccc tgccaagcgc aagagaaagt ataactggag tgccaaggct aaaagacgaa 180
ataccaccgg aactggtcga atgaggcacc taaaaattgt ataccgcaga ttcaggcatg 240
gattccgtga aggaacaaca cctaaaccca agagggcagc tgttgcagca tccagttcat 300
cttaagaatg tcaacgatta gtcatgcaat aaatgttctg gttttaaaaa atanaaaaaa 360
aaaaaaaaaa aaaaaaanaa naaaaaaaaa aaaaaaaaaa aaaaaaa 408

<210> 478
<211> 484
<212> DNA
<213> Homo sapiens

<400> 478
ggccgcgtcg accgcgcgga ggcggaggct tgggtgcgtt caagattcaa cttcacccgt 60

aacccaccgc catggccgag gaaggcattg ctgctggagg tgtaatggac gttaatactg 120
ctttacaaga ggttctgaag actgccctca tccacgatgg cctagcacgt ggaattcgcg 180
aagctgccaa agccttagac aagcgccaag cccatctttg tgtgcttgca tccaactgtg 240
atgagcctat gtatgtcaag ttggtggagg ccctttgtgc tgaacaccaa atcaacctaa 300
ttaaggttga tgacaacaag aaactaggag aatgggtagg cctttgtaaa attgacagag 360
aggggaaacc ccgtaaagtg gttggttgca gttgtgtagt agttaaggac tatggcaagg 420
agtctcaggc caaggatgtc attgaagagt atttcaaatg caagaaatga agaaataaat 480
cttt 484

<210> 479
<211> 153
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 50, 59, 107, 113, 126, 146
<223> n = A,T,C or G

<400> 479
ggccgccctt tttttttttt tttgagatgt gtaaaaaggc tttatttgcn ggggagcang 60
aatttaatca aaaaggccaa atcccatgtc atcatctgac tcttcanact ccnccttctt 120
ctcatntttc ttctcctctg ctgcancagg ggc 153

<210> 480
<211> 494
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 424
<223> n = A,T,C or G

<400> 480
ggccgcgtcg acctggtgtc gccatgggcc gccgccccgc ccgttgttac cggtattgta 60
agaacaagcc gtacccaaag tctcgcttct gccgaggtgt ccctgatgcc aagattcgca 120
tttttgacct ggggcggaaa aaggcaaaag tggatgagtt tccgctttgt ggccacatgg 180
tgtcagatga atatgagcag ctgtcctctg aagccctgga ggctgcccga atttgtgcca 240
ataagtacat ggtaaaaagt tgtggcaaag atggcttcca tatccgggtg cggctccacc 300
ccttccacgt catccgcatc aacaagatgt tgtcctgtgc tggggctgac aggctccaaa 360
caggcatgcg aggtgccttt ggaaagcccc agggcactgt ggccagggtt cacattggcc 420
aagntatcat gtccatccgc accaagctgc agaacaagga gcatgtgatt gaggccctgc 480
gcagggccaa gttc 494

<210> 481
<211> 533
<212> DNA
<213> Homo sapiens

<400> 481
ggccgcggta attcgccaaa atgacgaaca caaagggaaa gaggagaggc acccgatata 60
tgttctctag gccttttaga aaacatggag ttgttccttt ggccacatat atgcgaatct 120
ataagaaagg tgatattgta gacatcaagg gaatgggtac tgttcaaaaa ggaatgcccc 180
acaagtgtta ccatggcaaa actggaagag tctacaatgt tacccagcat gctgttggca 240
ttgttgtaaa caaacaagtt aagggcaaga ttcttgccaa gagaattaat gtgcgtattg 300
agcacattaa gcactctaag agccgagata gcttcctgaa acgtgtgaag gaaaatgatc 360
agaaaaagaa agaagccaaa gagaaaggta cctgggttca actaaagcgc cagcctgctc 420
cacccagaga agcacacttt gtgagaacca atggaagga gcctgagctg ctggaaccta 480
ttccctatga attcatggca taataggtgt taaaaaaaa ataaaggacc tct 533

<210> 482

<211> 501
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 166, 250, 325, 398, 470
<223> n = A,T,C or G

<400> 482
ggccgccctt tttttttttt tttaattgga aaagactgag ctatgtgtaa atagaataag 60
acaggaagag tgtagacaca ggaaagaggg cagacaaaaa caagtgcaca gttatctaag 120
ggaaacaatg ggatcaagct gcaagtatat aaacttgtct tgatanaaga atccttgatc 180
tggtttattc agtgtttggt ccaaacccac atccctgttc tgcctgtctc tgacttgctc 240
tgtgccccan aagcccagct tctacagata gcattagctg ggcagccctg ccctcttgca 300
acagctggat ttggccagtg atcancccag caggaatgta gatggcaaag gagagagagg 360
ttagtgtact tattccctgc atcacccccc tgcttggngg gcagctcttc ctccacagtc 420
ccagctctgg cctagctctg gttacaggtt ccctcccatt gcctcttcan atttaaaggt 480
gtgtctgtca gggtataact g 501

<210> 483
<211> 534
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 170, 183, 217, 229, 398
<223> n = A,T,C or G

<400> 483
ggccgccctt tttttttttt tttgggatat gacctttatt gaacttatcc accagagtgg 60
aaataatgtc tgtacaaaac caaatgtttg ttactataac ttctgcatca caattaaaat 120
ccaaacagtt ttttaaaaac agtcaactca atcaaaaccc actacttcan aatcaatagc 180
ttntttgaag ccacagtaac acttaaatat ggttaanact cgaatgcana aatttggttg 240
gttggaaagc taattaaact tccaacttgc tcaaatagaa ttacaaaaag gcaaaattgt 300
gtttttcaca gagatacagt ccactggaat caccaacact ggacagctgt tagagtattt 360
agagtcctga gataacaagg aatccaggca tcctttanac agtcttctgt tgtcctttct 420
tcccaatcag agatttgtgg atgtgtggaa tgacaccacc accagcaatt gtagccttga 480
tgagagaatc caattcttca tctccacgaa tagcaagttg caagtgacga gggg 534

<210> 484
<211> 139
<212> DNA
<213> Homo sapiens

<400> 484
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgaggggc 139

<210> 485
<211> 418
<212> DNA
<213> Homo sapiens

<400> 485
ggccgcgcgc ggtgcgacga aggagtaggt ggtgggatct caccgtgggt ccgattagcc 60
ttttctctgc cttgcttgct tgagcttcag cggaattcga aatggctggc ggtaaggctg 120
gaaaggactc cggaaaggcc aagacaaagg cggtttcccg ctcgcagaga gccggcttgc 180
agttcccagt gggccgtatt catcgacacc taaaatctag gacgaccagt catggacgtg 240
tgggcgcgac tgccgctgtg tacagcgcag ccatcctgga gtacctcacc gcagaggtac 300

ttgaactggc aggaaatgca tcaaaagact taaaggtaaa gcgtattacc cctcgtcact 360
tgcaacttgc tattcgtgga gatgaagaat tggattctct catcaaggct acaattgc 418

<210> 486
<211> 516
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 101, 135, 253
<223> n = A,T,C or G

<400> 486
ggccgccctt tttttttttt tttagtttat aatgttttac tatgatttag ggcttttttt 60
tcaaagaaca aaaattataa gcataaaaac tcaggtatca naaagactca aaaggctgtt 120
tttcactttg ttcanatttt gtttccaggc attaagtgtg tcatacagtt gttgccactg 180
ctgttttcca aatgtccgat gtgtgctatg actgacaact acttttctct gggtctgatc 240
aattttgcag tanaccattt tagttcttac ggcgtcaata acaaatgctt caacatcatc 300
agctccaatc tgaagttctt gctgcattgt gtcaaaagaa atttccttat tttctactgc 360
cattcccata aaagtaagta gtctcatttt tgccatattc tgttcatgta acaggccaag 420
tgaatcaatg aagtctttat tattctgata aaacttgaca tatgatgcca atttagcact 480
cacaaaaatg gttaaaagat catgaataag ctcgcc 516

<210> 487
<211> 461
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 78, 81, 180, 207, 269, 277, 339, 406
<223> n = A,T,C or G

<400> 487
ggccgccctt tttttttttt ttttattatt aatgcctttt aattttaatg tttcacattg 60
ttttgttttt tttttcanaa natttgtaac aaaaatacat ggaacttagt atatgtttca 120
ataaaatggg taaatacaga atctgaacaa gacaagtcta taagatataa tccttcttgn 180
ggggatagaa cattccactc cactaanaaa agagaatcac aacatgatta ggcctgatta 240
tctcataccg cctactgttc taatttcana gactggngga cttggagaaa aaaacaaatt 300
aaaaataaat aaataaaact gaatatggtc aactgcctna attgctctct ccttttccct 360
tttcccattt ctttacacag ccaaatgaga tgaggacgtg aggcanagcc ctgtggggga 420
cggtcagggg ctctgctgcc taaatgccag gcagatgcat g 461

<210> 488
<211> 562
<212> DNA
<213> Homo sapiens

<400> 488
ggccgcgtcg acggaaggtg agagcctgtt gctaacaatt tcctggtttt aaagctaagg 60
ctgattttat tgggaagatc tcacatgtgt gtggcccctg agagttccca gtgcctttta 120
tttgcagtcc ttccatttgg acctcctagc tgccccatca ggtcatctcc agggctcaga 180
ggggtgagac catttcccaa ggtcacagaa ccagctctct agtcaccacc ctgcctctcc 240
ctctcaccca gagtcagtac cagttttatg gctttattac aaactgctgg gtccctccca 300
ttttcaactt gattgatggg atgtcatccc ttatcctgtc tgacatttgc ctctggcctg 360
gttgctagaa gtttgcccca ggggcaagag ttgaaatttg gcttcctgag gtgggctttg 420
tggtttgcgt ccctaaagtg agcccactac tggttgcttg tccatggcca acaccagaaa 480
tcccctgagc actacctggg tctcattcca agaaggaaga gggtcaggag acctggggag 540
tctcatattc caagttcttc tt 562

<210> 489

<211> 394
<212> DNA
<213> Homo sapiens

<400> 489
ggccgcgtcg acatagcgct cacgcaagca tggttaacgt ccctaaaacc cgccggactt 60
tctgtaagaa gtgtggcaag caccaacccc ataaagtgac acagtacaag aagggcaagg 120
attctctgta cgcccaggga aagcggcgtt atgacaggaa gcagagtggc tatggtgggc 180
aaactaagcc gattttccgg aaaaaggcta aaactacaaa gaagattgtg ctaaggcttg 240
agtgcgttga gcccaactgc agatctaaga gaatgctggc tattaaaaga tgcaagcatt 300
ttgaactggg aggagataag aagagaaagg gccaagtgat ccagttctaa gtgtcatctt 360
ttattatgaa gacaataaaa tcttgagttt atgt 394

<210> 490
<211> 478
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 41, 50, 71, 95, 105, 158, 162, 288, 299, 317, 324, 386, 396, 403, 467
<223> n = A,T,C or G

<400> 490
ggccgccctt tttttttttt tttcggatgc aaacagcaaa nggctttatn gggaacacgg 60
gtacccgggc nactcagtct atcggatgac tggcncaccg agtgnggggt ttttaccctt 120
tttatagggc tggggagcaa aaagcgcggt tacagaancg anaagcgagc tgattggtta 180
gtttaaataa ggcttggggt ttttcccggt cttttgggga acttgaaact gaggtgggac 240
tttccaaaaa ctgttgctag tttcgcttta tctgagtacc atctgttntt ggccctganc 300
cggggcccag gtgctcnacc acanatatcc tgtttggccc ctgtcccagt tttgttcagc 360
cttattcttt aactaaactt ccttgngact tttganaact canctctggt actttttcat 420
gccttgcaaa atggcgttac tgcagctagc ttgctaagcc ttatggnggg gtctttca 478

<210> 491
<211> 574
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 469
<223> n = A,T,C or G

<400> 491
ggccgcgtcg acggcggcag ccatcaggta agccaagatg ggtgcataca agtacatcca 60
ggagctatgg agaaagaagc agtctgatgt catgcgcttt cttctgaggg tccgctgctg 120
gcagtaccgc cagctctctg ctctccacag ggctccccgc cccacccggc ctgataaagc 180
gcgccgactg ggctacaagg ccaagcaagg ttacgttata tataggattc gtgttcgccg 240
tggtggccga aaacgcccag ttcctaaggg tgcaacttac ggcaagcctg tccatcatgg 300
tgttaaccag ctaaagtttg ctcgaagcct tcagtccgtt gcagaggagc gagctggacg 360
ccactgtggg gctctgagag tcctgaattc ttactgggtt ggtgaagatt ccacatacaa 420
atttttgag gttatcctca ttgatccatt ccataaagct atcagaagna aatcctgaca 480
cccagtggat caccaaacca gtccacaagc acagggagat gcgtggctg acatctgcag 540
gccgaaagag ccgtggcctt ggaaagggcc acaa 574

<210> 492
<211> 586
<212> DNA
<213> Homo sapiens

<400> 492

ggccgcgtcg actttttttt ttaagagttc ataatatgcc tttattttgt aatttataaa 60
caacttctga cttgcccttt gaaagttaat tataattgat gactgctttt cttagatgct 120
tctgaagccc aagagagggg cagaatgtag ttcttgattt aaaaaaacag aaaggggagg 180
aggatgacct taactacaaa taatattcca ctgcaacatt attgctgtaa aacttccaag 240
ctggctgttc ttccagatgc tctcttttga tggctgtagt ggctgacaga tttatattta 300
catgttcaaa acaattaatg cttccattta ttcatagatt ctctgaggtt cccgtagaac 360
cacaccacct tctgtcatgg cactttgtag tcgtttcatc gagtctgagg ctgcctccca 420
cggggttggt tggtagacca tgaagttgat tcccgcctct aagcatctct gtgccagcac 480
tcgtcctata ctctcacaag ccaccacatt tctggtacta taaaggtgct ttttaatagc 540
ccactcacga gtggaggccg gaaccacaac cttgccattc tgatgc 586

<210> 493
<211> 499
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 485
<223> n = A,T,C or G

<400> 493
ggccgcgtcg acaaacagca taccagcagt ataaaatgta caagaaatat tagggaggca 60
agctggaatt gacaatgaga agatttgaaa agggaccttt gataagttgt cttgtctggt 120
ggttggtttg tttgttaaat ctgtgttggt ctgtgggtct cagaatctgc aagttctact 180
ttcagctgct cttaaataaa ctaacagact tactcttcaa ataattagat agttacaaaa 240
aaccccagca aatccccatc acattaatgg ggggaaaaca cttcttattt ataaattcat 300
gctatataaa atttcctata atagagtatg caatgtctgg cccatactag tactccaata 360
atagcctttg ttattgaaga aaaattacag agaatcactt gtttgcagac tgcattcaga 420
attgtcatta ggtttctgta gtctaggcag aatcatcgta aatgaatgaa ataacatatc 480
aaganagaga ttctaaaac 499

<210> 494
<211> 546
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 40, 71, 136, 144, 166, 176, 191, 197, 278, 311, 317, 321,
380, 402, 423, 444, 449, 492
<223> n = A,T,C or G

<400> 494
ggccgccctt tttttttttt tttttttttt ttttactcan agttttaaaa tgagtttatt 60
aaaaaaggtt nttaggaagg caacaacttt tgtccttaaa aagaagttat ggtttttcat 120
gctgtataat aaaggngatg taanaggcta cagagttaca agtttntttc tactgnaatt 180
ctctggtata ncacagngta gtcatttctg caattctaga ataaataaaa agtctcttct 240
atgcttctct tcaaaagcaa tgaataacag aagatggngt aaaaaagtca tatttttttct 300
attcattctg nagtatngga nccagttttt ttaccatcac aggctacaat tttcacttta 360
tccactttaa taagttctgn cacctctctg aattcaacat cnttcagtac aaaagtccac 420
acnttatcgc aaaatctgta cgtntttana gagcccctga aattgactct gttcctgacc 480
ctttgagcca gngctgcatt tatagcctta tcaaactgaa gtaaaacttg aagggcaagt 540
tggggg 546

<210> 495
<211> 139
<212> DNA
<213> Homo sapiens

<400> 495
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60

cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgaggggc 139

<210> 496
<211> 408
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 22, 34, 45, 60, 76, 98, 142, 208, 217, 264, 269, 273, 285, 344, 370, 379, 402
<223> n = A,T,C or G

<400> 496
ggccgcgtcg accacagatg tngttttctc tgcncgtgtg cgttntccct cctcccccgn 60
cctcagggtc cacggncacc atggcgtatt aggggcanca gtgcctgcgg cagcattggc 120
ctttgcagcg gcggcagcag cnccaggctc tgcagcggca accccccagcg gcttaagcca 180
tggcgcttct cacggcattc agcagcancg ttgctgnaac cgacaaagac accttcgaat 240
taagcacatt cctcgattcc agcnaagcnc cgnaacatga ccganatgag cttcctgagc 300
agcgaggtgt tggtggggga cttgatgtcc cccttcgacc cgtngggttt gggggctgaa 360
gaaagcctan gtctcttana tgattacctg gaggtggcca ancacttc 408

<210> 497
<211> 508
<212> DNA
<213> Homo sapiens

<400> 497
ggccgcgtcg accctcccct ctgtatatag catctccccc ctcctagtga gcaggggcct 60
gcaaggcatc actcccagcc cctcgccttc tagggcaccc tcagcaaagg ggcaggtggg 120
gacactccaa gtggggcagc tctccgtaca tgcgccccac ccccatgagc cagttcagcc 180
ctactggggg ctgagcgggg gcatcccctc ctttgtacat agtctccatg gatgtccctg 240
ccctgtagcc accagcccct tgctgctctc cctttaatgc catatggccc ctgcctaggg 300
cacaggcccc aacctgtgtg ctggggtccc cagcagcaaa cactggaaag tctgtttttt 360
tttttcttt cttcttcccc accccttaat tttaactttg tggtaactga gtgccccccgc 420
gtgcctgcgt gttgagtgtg tgggcggcag tgccgttccg gaggcctggt ccatctggag 480
ttttgagggg tgaggggacc agagcagt 508

<210> 498
<211> 409
<212> DNA
<213> Homo sapiens

<400> 498
ggccgcgtcg acgagttctc aaaagtcaca aagaagttta gttaaagaat aaggctgaac 60
aaaactggga caggggccaa acaggatatc tgtggtcgag cacctgggcc ccggctcagg 120
gccaagaaca gatggtactc agataaagcg aaactagcaa cagtttctgg aaagtcccac 180
ctcagtttca agttccccaa aagaccggga aaaaccccaa gccttattta aactaaccaa 240
tcagctcgct tctcgcttct gtaaccgcgc tttttgctcc ccagccctat aaaaagggta 300
aaaaccccac actcggtgcg ccagtcatcc gatagactga gtcgcccggg tacccgtgtt 360
cccaataaag ccttttgctg tttgcatccg aaaaaaaaaa aaaaagggc 409

<210> 499
<211> 79
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 32, 33, 35, 36, 43, 48, 64, 74
<223> n = A,T,C or G

<400> 499
ggccgccctt tttttttttt tttttttttt tnnannaaaa atnttttnaa taagagagta 60
gganccaggg ttanttttt 79

<210> 500
<211> 279
<212> DNA
<213> Homo sapiens

<400> 500
ggccgcgtcg acgcaggatg taataaatac attttggtgt gactaggcca caccaactct 60
taatcatctc ccattttcct tagacattta aatttcaagg caggtaccct ctgtgtactc 120
agaaatttga agaagttatt tggttttcca aaatgcacac tgcgggttat tgatttgttc 180
tttacaacta ttgttctcat atttctcaca ctaaataaat ctctatgaga aaaaaaaaaa 240
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaggggc 279

<210> 501
<211> 544
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 496, 501
<223> n = A,T,C or G

<400> 501
ggccgcgtcg acgcaggccg cgcgcgcggg agcgcgggag gatcggcggc tcgcggtcac 60
tggtccctgg ctcggttccc cgcaccccgg ggctcacact tacccgcgcg gaggagcagc 120
ggccgggtgt ccacccccat cctgcgccca gtctcctcga ttcccctcgc tctgagccgg 180
gagagccgaa cagctgaaga gagttcactg actccccagc cccaggtggg ccttgtgcac 240
atcatgacca gttttgaaga tgctgacaca gaagagacag taacttgtct ccagatgacg 300
gtttaccatc ctggccagtt gcagtgtgga atatttcagt caataagttt taacagagag 360
aaactccctt ccagcgaagt ggtgaaattt ggccgaaatt ccaacatctg tcattatact 420
tttcaggaca aacaggtttc ccgagttcag ttttctctgc agctgtttaa aaaattcaac 480
agctcagttc tcttcntttg naataaaaaa tatgagtaaa aagaccaatc tgatcgtgga 540
cagc 544

<210> 502
<211> 541
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 521
<223> n = A,T,C or G

<400> 502
ggccgcgtcg accgcggtgc gacgaaggag taggtggtgg gatctcaccg tgggtccgat 60
tagccttttc tctgccttgc ttgcttgagc ttcagcggaa ttcgaaatgg ctggcggtaa 120
ggctggaaag gactccggaa aggccaagac aaaggcggtt tcccgctcgc agagagccgg 180
cttgcagttc ccagtgggcc gtattcatcg acacctaaaa tctaggacga ccagtcatgg 240
acgtgtgggc gcgactgccg ctgtgtacag cgcagccatc ctggagtacc tcaccgcaga 300
ggtacttgaa ctggcaggaa atgcatcaaa agacttaaag gtaaagcgta ttacccctcg 360
tcacttgcaa cttgctattc gtggagatga agaattggat tctctcatca aggctacaat 420
tgctggtggt ggtgtcattc cacacatcca caaatctctg attgggaaga aaggacaaca 480
gaagactgtc taaaggatgc ctggattcct tgttatctca ngactctaaa tactctaaca 540
g 541

<210> 503

<211> 428
<212> DNA
<213> Homo sapiens

<400> 503
ggccgcgtcg acgggctcgg aacgagactg cacggattgt tttaagaaaa tggcagacaa 60
accagacatg ggggaaatcg ccagcttcga taaggccaag ctgaagaaaa cggagacgca 120
ggagaagaac accctgccga ccaaagagac cattgagcag gagaagcgga gtgaaatttc 180
ctaagatcct ggaggatttc ctaccccgt cctcttcgag accccagtcg tgatgtggag 240
gaagagccac ctgcaagatg gacacgagcc acaagctgca ctgtgaacct gggcactccg 300
cgccgatgcc accggcctgt gggtctctga agggaccccc ccccaatcgg actgccaaat 360
tctccggttt gccccgggat attatagaaa attatttgta tgaataatga aaataaaaca 420
cacctcgt 428

<210> 504
<211> 593
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 535, 537, 593
<223> n = A,T,C or G

<400> 504
ggccgcgtcg accctgcttc aacagtgctt ggacggaacc cggcgctcgt tccccacccc 60
ggccggccgc ccatagccag ccctccgtca cctcttcacc gcaccctcgg actgccccaa 120
ggcccccgcc gccgctccag cgccgcgcag ccaccgccgc cgccgccgcc tctccttagt 180
cgccgccatg acgaccgcgt ccacctcgca ggtgcgccag aactaccacc aggactcaga 240
ggccgccatc aaccgccaga tcaacctgga gctctacgcc tcctacgttt acctgtccat 300
gtcttactac tttgaccgcg atgatgtggc tttgaagaac tttgccaaat actttcttca 360
ccaatctcat gaggagaggg aacatgctga gaaactgatg aagctgcaga accaacgagg 420
tggccgaatc ttccttcagg atatcaagaa accagactgt gatgactggg agagcgggct 480
gaatgcaatg gagtgtgcat tacatttgga aaaaaatgtg aatcagtcac tactngnaac 540
tgcacaaact ggccactgac aaaaatgacc cccatttgtg tgacttcatt gan 593

<210> 505
<211> 145
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 118, 130
<223> n = A,T,C or G

<400> 505
ggccgcgtcg accaatcttg gtttttcagt tgatcttaag catgtcaatt cataaaaaca 60
agtcattttt gtatttttca tctttaagaa tgcttaaaaa agctaatccc taaaatantt 120
agatctttgn aaatgcatat taaat 145

<210> 506
<211> 343
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 190, 275, 298, 340
<223> n = A,T,C or G

<400> 506

ggccgcgtcg acgcggtgct cggagtgtgg tacttctcct agttgcagtc aggcttcata 60
cgctattgtc ctgcccgtta gagcagccag cgggtacaga atggattttg gaagagggag 120
tcaccactgg acctccaagg aagccacgtg cagacatcta caaccttcga tctcctgacg 180
agtttattgn tggccaaaac caggctttga ttgaaccagg atgaatgcgg gtgttggaag 240
tagaatatat atatacatat aaaattgaaa ctggngatgg aatatgagag gagccctntg 300
gaaagaaaag gacagaccct gtgctttcat gaaagtgaan atc 343

<210> 507
<211> 500
<212> DNA
<213> Homo sapiens

<400> 507
ggccgcgtcg accagctgtc ggctggaagg aactggtctg ctcacacttg ctggcttgcg 60
catcaggact ggctttatct cctgactcac ggtgcaaagg tgcactctgc gaacgttaag 120
tccgtcccca gcgcttggaa tcctacggcc cccacagccg gatcccctca gccttccagg 180
tcctcaactc ccgcggacgc tgaacaatgg cctccatggg gctacaggta atgggcatcg 240
cgctggccgt cctgggctgg ctggccgtca tgctgtgctg cgcgctgccc atgtggcgcg 300
tgacggcctt catcggcagc aacattgtca cctcgcagac catctgggag ggcctatgga 360
tgaactgcgt ggtgcagagc accggccaga tgcagtgcaa ggtgtacgac tcgctgctgg 420
cactgccgca ggacctgcag gcggcccgcg ccctcgtcat catcagcatc atcgtggctg 480
ctctgggcgt gctgctgtcc 500

<210> 508
<211> 532
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 254, 359, 363, 475, 526
<223> n = A,T,C or G

<400> 508
ggccgcgtcg actttttttt tttttttttt tgcatgacag agtctttact tttaaatgat 60
tatcgataca ccaagtaata catgtaacaa gttcttgaat tctatcatct agtaattttg 120
attaagagaa actaaaagca gcccaaacaa ttccactagt attcactgtt ctaaccatta 180
gcaagaatgg actactttaa ggctggctgc tgcttcacac aggttacaaa gaactattta 240
ctacttttc atanataaag cccctgacct tcaagaaagt gttagggaaa aaaattattt 300
aatcccttcc tttcttcaaa gaattgttat gtggtttttt tttttaaact agatctaana 360
aanaaaaagt caacactgat atacatgttg cttgagccaa aagacatagg aaaaaaagac 420
aacatataac cattaaattc ctaagaaata tgaggtaaaa agatgaaatc tttanataat 480
ttctaagtct gtacaaaaaa gctagatttg ctactctcca aaaagnggaa gg 532

<210> 509
<211> 499
<212> DNA
<213> Homo sapiens

<400> 509
ggccgcgtcg acgcctcgga ggcgttcagc tgcttcaaga tgaagctgaa catctccttc 60
ccagccactg gctgccagaa actcattgaa gtggacgatg aacgcaaact tcgtactttc 120
tatgagaagc gtatggccac agaagttgct gctgacgctc tgggtgaaga atggaagggt 180
tatgtggtcc gaatcagtgg tgggaacgac aaacaaggtt tccccatgaa gcagggtgtc 240
ttgacccatg gccgtgtccg cctgctactg agtaaggggc attcctgtta cagaccaagg 300
agaactggag aaagaaagag aaaatcagtt cgtggttgca ttgtggatgc aaatctgagc 360
gttctcaact tggttattgt aaaaaaagga gagaaggata ttcctggact gactgatact 420
acagtgcctc gccgcctggg ccccaaaaga gctagcagaa tccgcaaact tttcaatctc 480
tctaaagaag atgatgtcc 499

<210> 510
<211> 579

<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 46, 382, 466, 487, 513, 533, 555, 566, 568, 571
<223> n = A,T,C or G

<400> 510
ggccgccctt tttttttttt tttgacttta tggcaaaatt tattgnccca tcatttttat 60
gtgatgcttc aaatatcaca ttctagcaaa cccattcaat tcctgaaatt aaagttcgga 120
tattctcttg gcccttggcc tcaattttgc tatttgtata ttctcccgtg caatatctag 180
gaaaatcctt atatttaaaa attatttgtt gttttttgta gattcaaata aataatactt 240
tacatataag tatgttctgg atatttcatg gtacaatgaa aaactattca ttgtttactg 300
aaattcaaat ttaaccagga atcttgtatt gcatctggca accctacaac agacccacac 360
aatacatgaa gtgttgaagt anatttgctt gaagtttcac tggcatcttc actgattctt 420
ggataccaca gagaatgaat tttttatga attctcagcc ctcttnaaaa acttctccac 480
aaccctntgc acccagtttt ccttggggtc canacagagc tctcttccat canaaagctt 540
tacaataatt tctgngttgg cgcagngngg nccactctc 579

<210> 511
<211> 494
<212> DNA
<213> Homo sapiens

<400> 511
ggccgcgtcg actagggaac tagggtcacc tggagagccg cccaccgtct ctgcccgctc 60
gactcctccg cccgggccgc tcggccggtc cagccgcggc cggcgcctgg ctgtgaggtg 120
gattcccggc ccagtctgac catctccctc cagtttttcc acttcgttcg gaccttctca 180
taactatgtc caccctctac gtctcccctc acccagatgc cttccccagc ctccgagccc 240
tcatagccgc tcgctatggg gaggctgggg agggtcccgg atggggagga gcccaccccc 300
gcatctgtct ccagccaccc ccgactagca ggactccctt tcccccaccc cgcctgccgg 360
ccctggagca ggggcccggt gggctctggg tgtggggggc cacggctgtg gcccagctgc 420
tgtggccagc aggcctgggg ggcccagggg gcagccgggc ggctgtcctt gtccaacagt 480
gggtcagtta cgcc 494

<210> 512
<211> 514
<212> DNA
<213> Homo sapiens

<400> 512
ggccgcgtcg actgcttcct agaaggtcgt gtcacgtgga acctcttaat ctcagcatcc 60
ggagctccag gaagggaaaa tttcaagtca gatagaattc tatatatacc atttctttgg 120
aaccttcagc cctcaagatt ccaacatcat gacctcagtt tcaacacagt tgtccttagt 180
cctcatgtca ctgcttttgg tgctgcctgt tgtggaagca gtagaagccg gtgatgcaat 240
cgccctttg ttaggtgtgg ttctcagcat tacaggcatt tgtgcctgct tgggggtata 300
tgcacgaaaa agaaatggac agatgtgact ttgaaaggcc tactgagtca aacctcaccc 360
tgaaaacctt tgcgctttag aggctaaacc tgagatttgg tgtgtgaaag gttccaagaa 420
tcagtaaata agggagtttc acatttttca ttgtttccat gaaatggcaa caaacataca 480
tttataaatt gaaaaaaaaa tgttttcttt acaa 514

<210> 513
<211> 536
<212> DNA
<213> Homo sapiens

<400> 513
ggccgcgtcg acgtctagtc atactcctat tcaccgttct caactactca tacatgccct 60
gctcttgttt acactgccgg tttacactgt ttctccaagc catcacagct gatatctcct 120
ggtgctatcc ccaaactgcc actcttaact cttgaagtaa ataatctttg ctggcaggac 180
tatgctgaat ctccttaggc actctctaat cagatgtcct aggtcctccc aattcttaga 240

catttaatac ccatttttct cctcctttta ttcggacctt gtatcttcca tttagcttct 300
caaatcatcc aaaaccgtat ccaggccatc accaatcatt ctatacgaca aatgtttctt 360
ctaacatccc catgatatca ccccttacca caagacctcc cttcagctta atctctccca 420
ctctaggctc ccacgccgcc cctaatcccg cttgaagcag ccctgagaaa catcgcccat 480
tatctctcca taccaccccc caaaaatttt cgctgcccca acacttcaac actatt 536

<210> 514
<211> 257
<212> DNA
<213> Homo sapiens

<400> 514
ggccgcgtcg acatttcttg tgaaaacgtt tggaccttgt tctgtgggta tagataacac 60
ctttatattt gcccacaaat taatattttt atttccatga aaatatcata taaatatatt 120
acaaattgcc atccccccttc ccctccagtg atagctcata tatcatcttt tcatgttgat 180
atattctgaa tggctgcatt ttaatcttgt tatatagaca ttatttgtca ataaagaaca 240
actgataaag tcgacgc 257

<210> 515
<211> 139
<212> DNA
<213> Homo sapiens

<400> 515
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgagggggc 139

<210> 516
<211> 302
<212> DNA
<213> Homo sapiens

<400> 516
ggccgcgtcg actgctttaa ttcttaagca taagtaaaca tgatataaaa atatatgctg 60
aattacttgt gaagaatgca tttaaagcta ttttaaatgt gtttttattt gtaagacatt 120
acttattaag aaattggtta ttatgcttac tgttctaatc tggtggtaaa ggtattctta 180
agaatttgca ggtactacag attttcaaaa ctgaatgaga gaaaattgta taaccatcct 240
gctgttcctt tagtgcaata caataaaact ctgaaattaa gaaaaaaaaa aaaaaaaagg 300
gc 302

<210> 517
<211> 243
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 243
<223> n = A,T,C or G

<400> 517
ggccgcgtcg acgcaccagg atctcgggct cggaacgaga ctgcacggat tgttttaaga 60
aaatggcaga caaaccagac atgggggaaa tcgccagctt cgataaggcc aagctgaaga 120
aaacggagac gcaggagaag aacaccctgc cgaccaaaga gaccattgag caggagaagc 180
ggagtgaaat ttcctaagat cctggaggat ttcctacccc cgtcctcttc gagaccccag 240
tcn 243

<210> 518
<211> 537
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 172, 185, 219, 231, 364, 373, 400, 415, 440, 467
<223> n = A,T,C or G

<400> 518
ggccgccctt tttttttttt ttttggggat atgaccttta ttgaacttat ccaccagagt 60
ggaaataatg tctgtacaaa accaaatgtt tgttactata acttctgcat cacaattaaa 120
atccaaacag ttttttaaaa acagtcaact caatcaaaac ccactacttc anaatcaata 180
gcttntttga agccacagta acacttaaat atggttaana ctcgaatgca naaatttggt 240
tggttggaaa gctaattaaa cttccaactt gctcaaatag aattacaaaa aggcaaaatt 300
gtgtttttca cagagataca gtccactgga atcaccaaca ctggacagct gttagagtat 360
ttanagtcct ganataacaa ggaatccagg catcctttan acagtcttct gttgnccttt 420
cttcccaatc agagatttgn ggatgtgtgg aatgacacca ccaccancaa tttgtagcct 480
tgatgagaga atccaattct tcatctccac gaatagcaag ttgcaagtga cgagggg 537

<210> 519
<211> 415
<212> DNA
<213> Homo sapiens

<400> 519
ggccgcgtcg acgccatttt tttggaaacc tctgcgccat gagagccaag tggaggaaga 60
agcgaatgcg caggctgaag cgcaaaagaa gaaagatgag gcagaggtcc aagtaaaccg 120
ctagcttgtt gcaccgtgga ggccacagga gcagaaacat ggaatgccag acgctgggga 180
tgctggtaca agttgtggga ctgcatgcta ctgtctagag cttgtctcaa tggatctaga 240
acttcatcgc cctctgatcg ccgatcacct ctgagaccca ccttgctcat aaacaaaatg 300
cccatgttgg tcctctgccc tggacctgtg acattctgga ctatttctgt gtttatttgt 360
ggccgagtgt aacaaccata taataaatca cctcttccgc tgttttagct gaaga 415

<210> 520
<211> 544
<212> DNA
<213> Homo sapiens

<400> 520
ggccgcgtcg accagaattt cggtggtgca ggccctggtt ctgacccaac agtatcacca 60
actcaaatca atagatccag aagaagtaga atcgcgtgaa taaaagattt tattcagttt 120
ccagaaagag gggggaatga aagaccccac cataaggctt agcaagctag ctgcagtaac 180
gccattttgc aaggcatgaa aaagtaccag agctgagttc tcaaaagtca caaggaagtt 240
tagttaaaga ataaggctga acaaaactgg gacaggggcc aaacaggata tctgtggtcg 300
agcacctggg ccccggctca gggccaagaa cagatggtac tcagataaag cgaaactagc 360
aacagtttct ggaaagtccc acctcagttt caagttcccc aaaagaccgg gaaaaacccc 420
aagccttatt taaactaacc aatcagctcg cttctcgctt ctgtaaccgc gcttttgct 480
ccccagccct ataaaaaggg taaaaacccc acactcggtg cgccagtcat ccgatagact 540
gagt
544

<210> 521
<211> 544
<212> DNA
<213> Homo sapiens

<400> 521
ggccgccctt tttttttttt ttttttgtta ataatttgaa gatgtttatt gcattctatt 60
tttggtggga aaaaaatgta acatacattt atttagcacg acattgtgaa atacacaaaa 120
catgtaactg agaaagcagg aattttctat tcctagtcca tttctgagga ctaaatcatg 180
aactgctccc aatgtaatta aatatttctt acaatagttg ggcaccaagt ttaagattta 240
ttaattttct cctctcagta taggcagcaa ttcaccattt tctttcagtt ccttcacaat 300
atccaatcct cccaccagct ccccttcac atacagctga gggtatgttg gccaatttga 360
gtaagctttt aatccttgcc gaacttcttc atcctccaat atatcgaatg tttcatattc 420
aacaccagta ctatttagta tttccagaat ttgtttgctg aatccacatt ttgcttcctg 480

tttgtttcct ttcataaaga gcatcacaga agctttattt gtcagcactt tgagcctttc 540
ctct 544

<210> 522
<211> 519
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 188, 325, 365, 465, 495
<223> n = A,T,C or G

<400> 522
ggccgccctt tttttttttt tttaaagaag taagccttta tttccttgtt ttgcaaataa 60
aactggctaa gttggttgct ttttggtgat tagtcaaaga gaccaaatcc catatcctcg 120
tccgactcct ccgactcttc cttggcttca accttagctg ggctgcagc agcagcagga 180
gcagctgngg tggcagcagc cacaggggca gcagccacaa aggcagatgg atcagccaag 240
aaggccttga ccttttcagc aagtgggaag gtgtaatccg tctccacaga caaggccagg 300
actcgtttgt acccgttgat gatanaatgg ggtactgatg caacagttgg gtagccaatc 360
tgcanacaga cactggcaac attgcggaca ccctccagga agcgagaatg cagagtttcc 420
tctgtgatat caagcacttc agggttgtag atgctgccat tgtcnaacac ctgctggatg 480
accagcccaa agganaaggg ggagatgttg agcatgttc 519

<210> 523
<211> 572
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 301, 345, 355, 552, 566
<223> n = A,T,C or G

<400> 523
ggccgccctt tttttttttt ttttttttga aattcaagta actttattta aattcaaaaa 60
caattcttaa aactgcattt agagtcaaga ccctttgta ttataaaaat cacaagtatt 120
tctaagagac aaaaatactt ctaggttaac tagaccagat ctgactttgg actttattct 180
ttaaacaaat tgcagagaat agagaaaaaa ataggttatt tacagaaaac aatatctaca 240
tatgtactta gaggtacaaa tttggtgaca gaaaagactt cagtatatgc tggcatctta 300
naagcagttc tcaaagagct tagttttatt ttcttgaatt ttaanaatgc ctaanatcct 360
tcttcatcct cgatcttggg agccaagtag tattttaagt gtcccatatc cgcaatttta 420
tactctacaa caaggggtac atctgcagac atactgagtg tcaccgttga agagagtgga 480
gtggcttttg taaagaagtt caggtacctc agtgcaaaag ttagttgaac tggttcattc 540
atctctatgg tnacagcttc ctcctnttta tc 572

<210> 524
<211> 585
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 570
<223> n = A,T,C or G

<400> 524
ggccgcgtcg acctgttttc ctgcgcagga gccgcagggc cgtaggcagc catggcgccc 60
agccggaatg gcatggtctt gaagccccac ttccacaagg actggcagcg gcgcgtggcc 120
acgtggttca accagccggc ccgtaagatc cgcagacgta aggcccggca agccaaggcg 180
cgccgcatcg ccccgcgccc cgcgtcgggt cccatccggc ccatcgtgcg ctgccccacg 240
gttcggtacc acacgaaggt gcgcgccggc cgcggcttca gcctggagga gctcagggtg 300

gccggcattc acaagaaggt ggcccggacc atcggcattt ctgtggatcc gaggaggcgg 360
aacaagtcca cggagtccct gcaggccaac gtgcagcggc tgaaggagta ccgctccaaa 420
ctcatcctct tccccaggaa gccctcggcc cccaagaagg gagacagttc tgctgaagaa 480
ctgaaactgg ccacccagct gaccggaccg gtcatgcccg tccggaacgt ctataagaag 540
gagaaagctc gagtcatcac tgaggaagan aagaatttca aagcc 585

<210> 525
<211> 544
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 499
<223> n = A,T,C or G

<400> 525
ggccgcgtcg acgccggtcg tcgcgacgtt cgcccgctcg ctctgaggct cctgaagccg 60
aaaccagcta gactttcctc cttcccgcct gcctgtagcg gcgttgttgc cactccgcca 120
ccatgttcga ggcgcgcctg gtccagggct ccatcctcaa gaaggtgttg gaggcactca 180
aggacctcat caacgaggcc tgctgggata ttagctccag cggtgtaaac ctgcagagca 240
tggactcgtc ccacgtctct ttggtgcagc tcaccctgcg gtctgagggc ttcgacacct 300
accgctgcga ccgcaacctg gccatgggcg tgaacctcac cagtatgtcc aaaatactaa 360
aatgcgccgg caatgaagat atcattacac taagggccga agataacgcg gataccttgg 420
cgctagtatt tgaagcacca aaccaggaga aagtttcaga ctatgaaatg aagttgatgg 480
atttagatgt tgaacaacnt ggaattccag aacaggagta cagctgtgta gtaaagatgc 540
cttc 544

<210> 526
<211> 580
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 40, 330, 423, 534
<223> n = A,T,C or G

<400> 526
ggccgccctt tttttttttt ttttttcaca tctgcatcan atttattttt taaaggaatg 60
gattttgaga gaaaacaacg tgggcagaag tatggaatag aaaataaata caaatgtagg 120
ctattctgct aattgtttta taaccacgac aaactagtac agagaatgcc ctgtacaaaa 180
cacaacaaag gttcaaacat cgagatgttc ccttagcaag gctgaaaatt tcagtctctg 240
gtatttggaa tttaggctgc agtccttgtt tttggatgga tcactgggtg tgtggcacag 300
tccatgcttt taaccagatt tgaacagaan aatggccact tggcccaggt agaagtagat 360
gaagtgtttg gtttcatgtg tcacataact accgaagttc ctccccacga tgcaatgcca 420
ggngggattg tacttcttgt caaattcctt cttgatatga gccgcaatgt ccttctctat 480
gttgtatttc tccagcgcct gagtagcgca ctccaccgag tcctgttgca tctnttccga 540
catgtccgca tttttgatca cggcctttcg gtcgcacatg 580

<210> 527
<211> 520
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 54, 55, 204, 248, 364, 488
<223> n = A,T,C or G

<400> 527
ggccgccctt tttttttttt tttactaggc aaagaacttt attaatcttt gttnnaaact 60

tgattcccag gcttcttcgg cttaattagc tgcaaagaat gaattgtgta taagcaaaaa 120
ctgaaaagag ctgcagtgtc caaggggctt gggcttaaaa atattagaga tctagatttt 180
atcagatcca taaacaaaaa tttnttaaaa agcagtcata atataaaata gcagctccca 240
gtaacttntt caggttttat cttcagaagt tgactcaatt cagtttgcct cattcttgga 300
agcctcatca aaattctcca caagatctgg aacttcatca tcatcatcct ctccagtagc 360
aagnggtgct tttccatcca cagattgttt gggcagagct tcggccagtc tccttaaact 420
agtcagacta tccgcaccaa gctggtttaa gatgctgggt agcatttctg tcagctgctt 480
tgtctcanca tggcctgtaa tggtgaaagt gttcgctgcc 520

<210> 528
<211> 411
<212> DNA
<213> Homo sapiens

<400> 528
ggccgcgtcg actttttgga aacctctgcg ccatgagagc caagtggagg aagaagcgaa 60
tgcgcaggct gaagcgcaaa agaagaaaga tgaggcagag gtccaagtaa accgctagct 120
tgttgcaccg tggaggccac aggagcagaa acatggaatg ccagacgctg ggatgctgg 180
tacaagttgt gggactgcat gctactgtct agagcttgtc tcaatggatc tagaacttca 240
tcgccctctg atcgccgatc acctctgaga cccaccttgc tcataaacaa aatgcccatg 300
ttggtcctct gccctggacc tgtgacattc tggactattt ctgtgtttat ttgtggccga 360
gtgtaacaac catataataa atcacctctt ccgctgtttt agctgaagaa t 411

<210> 529
<211> 518
<212> DNA
<213> Homo sapiens

<400> 529
ggccgcgtcg acgcccctcc tccgccgccg gctcccgggt gtggtggtcg caccagctct 60
ctgctctccc agcgcagcgc cgccgcccgg cccctccagc ttcccggacc atggccaacc 120
tggagcgcac cttcatcgcc atcaagccgg acggcgtgca gcgcggcctg gtgggcgaga 180
tcatcaagcg cttcgagcag aagggattcc gcctcgtggc catgaagttc ctccgggcct 240
ctgaagaaca cctgaagcag cactacattg acctgaaaga ccgaccattc ttccctgggc 300
tggtgaagta catgaactca gggccggttg tggccatggt ctgggagggg ctgaacgtgg 360
tgaagacagg ccgagtgatg cttggggaga ccaatccagc agattcaaag ccaggcacca 420
ttcgtgggga cttctgcatt caggttggca ggaacatcat tcatggcagt gattcagtaa 480
aaagtgctga aaaagaaatc agcctatggt ttaagcct 518

<210> 530
<211> 403
<212> DNA
<213> Homo sapiens

<400> 530
ggccgcgtcg accgctccaa gcccagccct cagccatggc atgccccctg gatcaggcca 60
ttggcctcct cgtggccatc ttccacaagt actccggcag ggagggtgac aagcacaccc 120
tgagcaagaa ggagctgaag gagctgatcc agaaggagct caccattggc tcgaagctgc 180
aggatgctga aattgcaagg ctgatggaag acttggaccg gaacaaggac caggaggtga 240
acttccagga gtatgtcacc ttcctggggg ccttggcttt gatctacaat gaagccctca 300
agggctgaaa ataaataggg aagatggaga caccctctgg gggtcctctc tgagtcaaat 360
ccagtggtgg gtaattgtac aataaatttt ttttggtcaa att 403

<210> 531
<211> 551
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 40, 65, 88, 179, 184, 199, 220, 266, 282, 291, 326, 366,
415, 432, 447, 458, 518, 538

<223> n = A,T,C or G

<400> 531
ggccgccctt ttttttttt ttttttttt tttttttttn gagtttaaat gcattttatt 60
tttanacaac ctacatgaca tgtttttntt aaaaacaatg cctccactcc aaataaatca 120
cagtcaaaat aaatgaagag ctcaagatga catcagtccc atttgtctta agtcctggng 180
ttgngtggat gacaagcana agccagttat gatgacaggn gatagatcca aaataattgc 240
cacatttgtt aacattttc catttntaaa ccatccttaa anaaaatcat ntatggggtc 300
acaccatcct cacggtagtc caatanagca accatgccat ctggattcat gttttcacca 360
ataaanaact ggtagttttt gaaattagca aggatgtgct tgatttgttc tgcanccct 420
gtcataaaag gntttactct ttctggnctc tgttcttnaa gtttcccttt gattgatttc 480
atgtaatctt tgatgtactt cttggaggct tcttttgnga aacttgtttc ctgcaggnga 540
tggttcatga c
551

<210> 532
<211> 556
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 34, 108, 164, 262, 273, 351, 451, 471, 512, 547
<223> n = A,T,C or G

<400> 532
ggccgccctt ttttttttt tttttttttc tcanaatgga ataaatatcc cttttaatag 60
ttatatatac agatatacaa ctgttagctt taattggcag ctctcttntt ttttcttctt 120
ttcactggct ttttacttgg tgctttttct tgttttgcac tggnggtctg tgttcttggc 180
ttccaatatc agagacttct actccagtgt ccatttttat accatcaaga atgatagctt 240
gatcaccacc gccttcatca tnttccttct canagtcttc aagatcaccc caggagtttt 300
ctactccctc tccaatttgg gcagttccag gagtccatag cacaggtgta naaacaactt 360
ctgaaggagg ttctgcttca gcaatgattt cttctgcttt ttcttctaca tccgaggtat 420
caataggggc cttttccatt ttaaatgctg ngatcctttg atttgctata nactctgcaa 480
aaccaaactt tccaccttct ttccttactt tntgggcatt ctccaaagct ttcaatatta 540
gctctgnaat ttctgc
556

<210> 533
<211> 564
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 538
<223> n = A,T,C or G

<400> 533
ggccgcgtcg accgcggtgc gacgaaggag taggtggtgg gatctcaccg tgggtccgat 60
tagccttttc tctgccttgc ttgcttgagc ttcagcggaa ttcgaaatgg ctggcggtaa 120
ggctggaaag gactccggaa aggccaagac aaaggcggtt tcccgctcgc agagagccgg 180
cttgcagttc ccagtgggcc gtattcatcg acacctaaaa tctaggacga ccagtcatgg 240
acgtgtgggc gcgactgccg ctgtgtacag cgcagccatc ctggagtacc tcaccgcaga 300
ggtacttgaa ctggcaggaa atgcatcaaa agacttaaag gtaaagcgta ttaccctcg 360
tcacttgcaa cttgctattc gtggagatga agaattggat tctctcatca aggctacaat 420
tgctggtggt ggtgtcattc cacacatcca caaatctctg attgggaaga aaggacaaca 480
gaagactgtc taaaggatgc ctggattcct tgttatctca ggactctaaa tactctanag 540
ctgtccagtg ttggtgattc cagt
564

<210> 534
<211> 553
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 173, 193
<223> n = A,T,C or G

<400> 534
ggccgccctt tttttttttt tttcttaaaa tagagatttc ttactaaata ccattttatt 60
tcatttcttc acagatcttc tggttcttga tcatcttaat tatcaagtgt cgtatatagg 120
gaacaagtat tgatgttcac tatgattcaa actattactg ttccatagtc agnggagctt 180
tttcaatgtc canaaagaat actttcaatc tttatgaaca gcctaggatt ttgcagttgt 240
ttctgaaggc tcaaattgtc ctgcttcaaa tttttctttg aattttaagt agtctcttct 300
tttatcaaaa tattttatcc actgttgggg acaacttgat tcgaaagagc ttcttaactt 360
cttgcattga gaagcatcct ctaagttctc atctaaacac ttccagtact catcccgggc 420
cccccagcag acctgtcttt ccttcataga tggggctgcc attcctactg cgatgaagct 480
ctctgcccgc ccacgtccgg cttcctttcg atgtcgacgg gaggaaactg tcacgcaggc 540
caccaaccgg cgg 553

<210> 535
<211> 604
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 25, 486, 582
<223> n = A,T,C or G

<400> 535
ggccgccctt tttttttttt tttanaatta aaatgcttta ttgttgaaca ttagcaatga 60
atggaaggaa gaatgcaaat aaaagtagga atagtttcca attctgtgta aatttcttca 120
tttatagttc attttaaaag aaaaatcata aatgcaaggc atggtattgc acaaactttc 180
accgggctta gaaatccaga acttagtatt taaagtttta atctttgttt atggtaatta 240
tcaatagaaa cctttacaat gacatcttat aagctgatct ttactaataa actgaaaaaa 300
cagtacttca gtcattaccc cattctccct ctgtgtttca aaacatagac cgttcattat 360
aactctggaa tttaagttgt aatatttata ataaaatcta aacatcctaa gaacttaatt 420
ttaagcaaaa atgaaatatc agaaaatatc aatcctttct cttagattct gagaaatttg 480
ggaggngaat tccatatgta atgaaataat tacatttttt ttgcacttaa tgtaaatcta 540
tagatgaatt aatagctgaa ttatgtaaaa catcaccata tntaagccca ctacatgtac 600
ttag 604

<210> 536
<211> 539
<212> DNA
<213> Homo sapiens

<400> 536
ggccgcggaa gaagtagaat cgcgtgaata aaagatttta ttcagtttcc agaaagaggg 60
gggaatgaaa gaccccacca taaggcttag caagctagct gcagtaacgc cattttgcaa 120
ggcatgaaaa agtaccagag ctgagttctc aaaagtcaca aggaagttta gttaaagaat 180
aaggctgaac aaaactggga caggggccaa acaggatatc tgtggtcgag cacctgggcc 240
ccggctcagg gccaagaaca gatggtactc agataaagcg aaactagcaa cagtttctgg 300
aaagtcccac ctcagtttca agttccccaa aagaccggga aaaccccaa gccttattta 360
aactaaccaa tcagctcgct tctcgcttct gtaaccgcgc tttttgctcc ccagccctat 420
aaaaagggta aaaaccccac actcggtgcg ccagtcatcc gatagactga gtcgcccggg 480
taccegtgtt cccaataaag ccttttgctg tttgcatccg aaaaaaaaaa aaaaagggc 539

<210> 537
<211> 556
<212> DNA
<213> Homo sapiens

<400> 537
ggccgcgtcg acggtttcgg tagcgacggt agctctagcc gggcctgagc tgtgctagca 60
cctcccccag gagaccgttg cagtcggcca gccccttct ccacggtaac catgtgcgac 120
cgaaaggccg tgatcaaaaa tgcggacatg tcggaagaga tgcaacagga ctcggtggag 180
tgcgctactc aggcgctgga gaaatacaac atagagaagg acattgcggc tcatatcaag 240
aaggaatttg acaagaagta caatcccacc tggcattgca tcgtggggag gaacttcggt 300
agttatgtga cacatgaaac caaacacttc atctacttct acctgggcca agtggccatt 360
cttctgttca aatctggtta aaagcatgga ctgtgccaca cacccagtga tccatccaaa 420
aacaaggact gcagcctaaa ttccaaatac cagagactga aattttcagc cttgctaagg 480
gaacatctcg atgtttgaac ctttgttgtg ttttgtacag ggcattctct gtactagttt 540
gtcgtggtta taaaac 556

<210> 538
<211> 533
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 7, 8, 9, 524
<223> n = A,T,C or G

<400> 538
ggccgcnnng acgcccggtg ccaagcgcag ctagctcagc aggcggcagc ggcggcctga 60
gcttcagggc agccagctcc ctcccggtct cgccttccct cgcggtcagc atgaaagcct 120
tcagtcccgt gaggtccgtt aggaaaaaca gcctgtcgga ccacagcctg ggcatctccc 180
ggagcaaaac ccctgtggac gacccgatga gcctgctata caacatgaac gactgctact 240
ccaagctcaa ggagctggtg cccagcatcc cccagaacaa gaaggtgagc aagatggaaa 300
tcctgcagca cgtcatcgac tacatcttgg acctgcagat cgccctggac tcgcatccca 360
ctattgtcag cctgcatcac cagagacccg ggcagaacca ggcgtccagg acgccgctga 420
ccaccctcaa cacggatatc agcatcctgt ccttgcaggc ttctgaattc ccttctgagt 480
taatgtcaaa tgacagcaaa gcactgtgtg gctgaataag cggngttcat gat 533

<210> 539
<211> 601
<212> DNA
<213> Homo sapiens

<400> 539
ggccgcgtcg accatgccta tcatatagta aaacccagcc catgacccct aacagggcc 60
ctctcagccc tcctaatgac ctccggccta gccatgtgat ttcacttcca ctccataacg 120
ctcctcatac taggcctact aaccaacaca ctaaccatat accaatgatg gcgcgatgta 180
acacgagaaa gcacatacca aggccaccac acaccacctg tccaaaaagg ccttcgatac 240
gggataatcc tatttattac ctcagaagtt tttttcttcg caggattttt ctgagccttt 300
taccactcca gcctagcccc tacccccaa ttaggagggc actggccccc aacaggcatc 360
accccgctaa atcccctaga agtcccactc ctaaacacat ccgtattact cgcatcagga 420
gtatcaatca cctgagctca ccatagtcta atagaaaaca accgaaacca aataattcaa 480
gcactgctta ttacaatttt actgggtctc tattttaccc tcctacaagc ctcagagtac 540
ttcgagtctc ccttcaccat ttccgacggc atctacggct caacattttt tgtagccaca 600
g 601

<210> 540
<211> 546
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 543
<223> n = A,T,C or G

<400> 540

ggccgcgtcg actaattttt aaatatttga tcattttcta ttgtccaatc atttcagcac 60
ctccaaaggt ccctaggaca ctttgcctct cttctccccc tgccccccac cctgctccca 120
catctggggg cccatgggcc aggagtggat aagcctgcat taatacaacc tttctccatt 180
cactttctat ttacaaatta ggaaagcaac cttttggttt atatatattt tttttaatac 240
ctcagtgctg caagtatcac cagagaggct atggaagaat ttttttaat ttattgtaga 300
tgtaaacaga attttaaaaa taaaaagtat aaacatcact gcactgtgac tggtgggaaa 360
aactgacagt ttcctctttg cacatgttta acatttggct gttataatat atggtcctcg 420
gttggggaaa gatacttatg atgaaggata ttttttaatt taacttttt ttaaatattg 480
gtaataggtc ggcaacagca actatagaag tacaactcaa tagatggcat taaaacatat 540
tgnagt 546

<210> 541
<211> 589
<212> DNA
<213> Homo sapiens

<400> 541
ggccgcgtcg actgcattct caaccgcttg gtccagtttg taaaagacag aatttcggtg 60
gtgcaggccc tggttctgac ccaacagtat caccaactca aatcaataga tccagaagaa 120
gtagaatcgc gtgaataaaa gattttattc agtttccaga aagagggggg aatgaaagac 180
cccaccataa ggcttagcaa gctagctgca gtaacgccat tttgcaaggc atgaaaaagt 240
accagagctg agttctcaaa agtcacaaag aagtttagtt aaagaataag gctgaacaaa 300
actgggacag gggccaaaca ggatatctgt ggtcgagcac ctgggccccg gctcagggcc 360
aagaacagat ggtactcaga taaagcgaaa ctagcaacag tttctggaaa gtcccacctc 420
agtttcaagt tccccaaaag accgggaaaa accccaagcc ttatttaaac taaccaatca 480
gctcgcttct cgcttctgta accgcgcttt ttgctcccca gccctataaa aagggtaaaa 540
accccacact cggtgcgcca gtcatccgat agactgagtc gcccgggta 589

<210> 542
<211> 73
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 62, 66, 67
<223> n = A,T,C or G

<400> 542
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 60
tngggnncca aaa 73

<210> 543
<211> 139
<212> DNA
<213> Homo sapiens

<400> 543
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaaccattc 60
gtagacgacc tgcttctggg tcggggtttc gtacgtagca gagcagctcc ctcgctgcga 120
tctattgaaa ggtcgacgc 139

<210> 544
<211> 299
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 243
<223> n = A,T,C or G

<400> 544
ggccgccctt ttttttttt tttcaggctg ttgactttat ttagcttggt tgttggtgac 60
agtagggaag gctgaggtta aaaatgggga caggaagccg gtattaatat atttattttt 120
ttctttatat tgtattgttt tacctttgaa atatcatttt taaagggaat tcataaataa 180
aactttaaaa tgtaatccta ataatggagt tttaaattaa taaccctttg tagggcaatt 240
aancctggga ttttagggca gggattctgt actgtctctg gtgggtaaag ggtcgacgc 299

<210> 545
<211> 548
<212> DNA
<213> Homo sapiens

<400> 545
ggccgcgtcg acgccgctcc cagccacagc ctcccgcgcc tcgctcagct ccaacatggc 60
aaaaatctcc agccctacag agactgagcg gtgcatcgag tccctgattg ctgtcttcca 120
gaagtatgct ggaaaggatg gttataacta cactctctcc aagacagagt tcctaagctt 180
catgaataca gaactagctg ccttcacaaa gaaccagaag gaccctggtg tccttgaccg 240
catgatgaag aaactggaca ccaacagtga tggtcagcta gatttctcag aatttcttaa 300
tctgattggt ggcctagcta tggcttgcca tgactccttc ctcaaggctg tcccttccca 360
gaagcggacc tgaggacccc ttggccctgg ccttcaaacc cacccccttt ccttccagcc 420
tttctgtcat catctccaca gcccacccat cccctgagca cactaaccac ctcatgcagg 480
ccccacctgc caatagtaat aaagcaatgt cactttttta aaacatgaaa aaaaaaaaaa 540
aaaagggc 548

<210> 546
<211> 55
<212> DNA
<213> Homo sapiens

<400> 546
ggcggtttgc gtattgggcg ctcttccgct tcctcgctca ctgactcgct gcgct 55

<210> 547
<211> 502
<212> DNA
<213> Homo sapiens

<400> 547
ggccgcgtcg accacagctc ctcttaaatc ctccaatctc agtacccagt gttttagcca 60
tgctcgggtg gctaaattac atccaggaat ggtgccaggg cctttagcca tttgtctctc 120
ctcacactcc agggcccata tggcccaggt tctgacagtt tgccttactc ccttggcctg 180
gggctagccc tacctgatac cctgtgtcaa tgagtgtacc ttggagagct atccactcag 240
gccccagtgc ctctatttgc taagggactc tgccacagaa aagaagggga gagatgttca 300
tgtaacctca aaatacttag gcttggtttt gatgctagag aggaagaagg acttggagag 360
agagaaggaa tggctggtcc agaggctttt gtccactccc tctcactgga agtggttgat 420
ctccagggaa tccccaaggt tagcctgctt aggggaaggg ctaggggtac ctggaatgta 480
ggatctcccc catgcctggc ct 502

<210> 548
<211> 365
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 15, 23, 42, 58, 60, 66, 83, 97, 101, 103, 110, 138, 162, 185, 242, 270, 291, 339, 345
<223> n = A,T,C or G

<400> 548
ggccgcgtcg acccnccgcc gcnccgccat catggacacc anccgtgtgc agcctatnan 60
gctggncagg gtcaccaagg tcntgggcag gaccggntct nanggacagn gcacgcaggt 120

gcgcgtggaa ttcatggncg acacgagccg atccatcatc cncaatgtaa aaggccgcgt 180
gcgcnagggc gacgtgctca cccttttgga gtcagagcga gaagcccgga ggttgcgctg 240
ancttggctg ctcgctgggt cttggatgtn gggttcgacc acttggccga ngggaatggt 300
ctgtcacaat ctgctccttt tttttgtccg ccacacgtna ctganatgct cctttaaata 360
aagcg 365

<210> 549
<211> 82
<212> DNA
<213> Homo sapiens

<400> 549
ggccgcgtcg acgccggtcg tcgcgacgtt cgcccgctcg ctctgaggct cctgaagccg 60
aaaccagcta gactttcctc ct 82

<210> 550
<211> 631
<212> DNA
<213> Homo sapiens

<400> 550
ggccgcgtcg acgcgtagca gagtggtcgt tgtctttcta ggtctcagcc ggtcgtcgcg 60
acgttcgccc gctcgctctg aggctcctga agccgaaacc agctagactt tcctccttcc 120
cgcctgcctg tagcggcgtt gttgccactc cgccaccatg ttcgaggcgc gcctggtcca 180
gggctccatc ctcaagaagg tgttggaggc actcaaggac ctcatcaacg aggcctgctg 240
ggatattagc tccagcggtg taaacctgca gagcatggac tcgtcccacg tctctttggt 300
gcagctcacc ctgcggtctg agggcttcga cacctaccgc tgcgaccgca acctggccat 360
gggcgtgaac ctcaccagta tgtccaaaat actaaaatgc gccggcaatg aagatatcat 420
tacactaagg gccgaagata acgcggatac cttggcgcta gtatttgaag caccaaacca 480
ggagaaagtt tcagactatg aaatgaagtt gatggattta gatgttgaac aacttggaat 540
tccagaacag gagtacagct gtgtagtaaa gatgccttct ggtgaatttg cacgtatatg 600
ccgagatctc agccatattg gagatgctgt t 631

<210> 551
<211> 485
<212> DNA
<213> Homo sapiens

<400> 551
ggccgcgtcg accgcggtcg taagggctga ggatttttgg tccgcacgct cctgctcctg 60
actcaccgct gttcgctctc gccgaggaac aagtcggtca ggaagcccgc gcgcaacagc 120
catggctttt aaggataccg gaaaaacacc cgtggagccg gaggtggcaa ttcaccgaat 180
tcgaatcacc ctaacaagcc gcaacgtaaa atccttggaa aaggtgtgtg ctgacttgat 240
aagaggcgca aaagaaaaga atctcaaagt gaaaggacca gttcgaatgc ctaccaagac 300
tttgagaatc actacaagaa aaactccttg tggtgaaggt tctaagacgt gggatcgttt 360
ccagatgaga attcacaagc gactcattga cttgcacagt ccttctgaga ttgttaagca 420
gattacttcc atcagtattg agccaggagt tgaggtggaa gtcaccattg cagatgctta 480
agtca 485

<210> 552
<211> 478
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 115, 357
<223> n = A,T,C or G

<400> 552
ggccgccctt tttttttttt tttacattga gaaaattaat ttattcccat gatgggggct 60
gaaggagggc ccagagctag agcctggtct cctgccccct tgcctcttct tccanatgaa 120

gagaggctta gctgaggcct gaacaggcct gggatggctc ttgggcttga gggcctgttc 180
tggcaggatg gcaagcagac actggacagg gtcacttggg cggccgatat gccagcttcc 240
gactcttcag gactgaccac ttgtgccgct ttatggtgta gaccaggggc accagcagag 300
ccatcatcat caacatcttg agccccatgc gttttcgatg gtcgtgctct ggctcanatg 360
cccagcgcag gaaggtgcac acatccttgg ctatctggga catggtagct ggggtgccat 420
cgtcaaactc taagacatct gtgtagatgg gaggggccat ggcaatggcc tggccagg 478

<210> 553
<211> 451
<212> DNA
<213> Homo sapiens

<400> 553
ggccgcgtcg acgcgagtgg gagcaccagg atctcgggct cggaacgaga ctgcacggat 60
tgttttaaga aaatggcaga caaaccagac atgggggaaa tcgccagctt cgataaggcc 120
aagctgaaga aaacggagac gcaggagaag aacaccctgc cgaccaaaga gaccattgag 180
caggagaagc ggagtgaaat ttcctaagat cctggaggat ttcctacccc cgtcctcttc 240
gagaccccag tcgtgatgtg gaggaagagc cacctgcaag atggacacga gccacaagct 300
gcactgtgaa cctgggcact ccgcgccgat gccaccggcc tgtgggtctc tgaagggacc 360
cccccccaat cggactgcca aattctccgg tttgccccgg gatattatag aaaattattt 420
gtatgaataa tgaaaataaa acacacctcg t 451

<210> 554
<211> 558
<212> DNA
<213> Homo sapiens

<400> 554
ggccgcgtcg accagtttgt aaaagacaga atttcggtgg tgcaggccct ggttctgacc 60
caacagtatc accaactcaa atcaatagat ccagaagaag tagaatcgcg tgaataaaag 120
attttattca gtttccagaa agagggggga atgaaagacc ccaccataag gcttagcaag 180
ctagctgcag taacgccatt ttgcaaggca tgaaaaagta ccagagctga gttctcaaaa 240
gtcacaagga agtttagtta aagaataagg ctgaacaaaa ctgggacagg ggccaaacag 300
gatatctgtg gtcgagcacc tgggccccgg ctcagggcca agaacagatg gtactcagat 360
aaagcgaaac tagcaacagt ttctggaaag tcccacctca gtttcaagtt ccccaaaaga 420
ccgggaaaaa ccccaagcct tatttaaact aaccaatcag ctcgcttctc gcttctgtaa 480
ccgcgctttt tgctccccag ccctataaaa agggtaaaaa ccccacactc ggtgcgccag 540
tcatccgata gactgagt 558

<210> 555
<211> 546
<212> DNA
<213> Homo sapiens

<400> 555
ggccgcgtcg acgcctgggc tggacgtggt tttgtctgct gcgcccgctc ttcgcgctct 60
cgtttcattt tctgcagcgc gccagcagga tggcccacaa gcagatctac tactcggaca 120
agtacttcga cgaacactac gagtaccggc atgttatgtt acccagagaa ctttccaaac 180
aagtacctaa aactcatctg atgtctgaag aggagtggag gagacttggt gtccaacaga 240
gtctaggctg ggttcattac atgattcatg agccagaacc acatattctt ctctttagac 300
gacctcttcc aaaagatcaa caaaaatgaa gtttatctgg ggatcgtcaa atctttttca 360
aatttaatgt atatgtgtat ataaggtagt attcagtgaa tacttgagaa atgtacaaat 420
ctttcatcca tacctgtgca tgagctgtat tcttcacagc aacagagctc agttaaatgc 480
aactgcaagt aggttactgt aagatgttta agataaaagt tcttccagtc agtttttctc 540
ttaagt 546

<210> 556
<211> 561
<212> DNA
<213> Homo sapiens

<400> 556

ggccgcgatc gcggtgcgac gaaggagtag gtggtgggat ctcaccgtgg gtccgattag 60
cctttctct gccttgcttg cttgagcttc agcggaattc gaaatggctg gcggtaaggc 120
tggaaaggac tccggaaagg ccaagacaaa ggcggtttcc cgctcgcaga gagccggctt 180
gcagttccca gtgggccgta ttcatcgaca cctaaaatct aggacgacca gtcatggacg 240
tgtgggcgcg actgccgctg tgtacagcgc agccatcctg gagtacctca ccgcagaggt 300
acttgaactg gcaggaaatg catcaaaaga cttaaaggta aagcgtatta cccctcgtca 360
cttgcaactt gctattcgtg gagatgaaga attggattct ctcatcaagg ctacaattgc 420
tggtggtggt gtcattccac acatccacaa atctctgatt gggaagaaag gacaacagaa 480
gactgtctaa aggatgcctg gattccttgt tatctcagga ctctaaatac tctaacagct 540
gtccagtgtt ggtgattcca g 561

<210> 557
<211> 148
<212> DNA
<213> Homo sapiens

<400> 557
ggccgcgtcg acagggtttg actttcaata gatcgcagcg agggagctgc tctgctacgt 60
acgaaacccc gacccagaag caggtcgtct acgaatggtt tagcgccagg ttccccacga 120
acgtgcggtg cgtgacgggc gagggggc 148

<210> 558
<211> 483
<212> DNA
<213> Homo sapiens

<400> 558
ggccgcgtcg acggtacttc tcctagttgc agtcaggctt catacgctat tgtcctgccc 60
gttagagcag ccagcgggta cagaatggat tttggaagag ggagtcacca ctggacctcc 120
aaggaagcca cgtgcagaca tctacaacct tcgatctcct gacgagttta ttgttggcca 180
aaaccaggct ttgattgaac caggatgaat gcgggtgttg gaagtagaat atatatatac 240
atataaaatt gaaactggcg atggaatatg agaggagccc tctggaaaga aaaggacaga 300
ccctgtgctt tcatgaaagt gaagatctgg ctgaaccagt tccacaaggt tactgtatac 360
atagcctgag tttaaaaggc tgtgcccact tcaagaatgt cattgttaga ctttgaaatt 420
tctaactgcc tacctgcata aagaaaataa aatcttttaa atcaaaaaaa aaaaaaaaag 480
ggc 483

<210> 559
<211> 343
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 331
<223> n = A,T,C or G

<400> 559
ggccgcgtcg acgccggagg agacgcacgc agctgacttt gtcttctccg cacgactgtt 60
acagaggtct ccagagcctt ctctctcctg tgcaaaatgg caactcttaa ggaaaaactc 120
attgcaccag ttgcggaaga agaggcaaca gttccaaaca ataagatcac tgtagtgggt 180
gttggacaag ttggtatggc gtgtgctatc agcattctgg gaaagtctct ggctgatgaa 240
cttgctcttg tggatgtttt ggaagataag cttaaaggag aaatgatgga tctgcagcat 300
gggagcttat ttcttcagac acctaaattg nggcagataa aga 343

<210> 560
<211> 579
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature

<222> 230, 399
<223> n = A,T,C or G

<400> 560
ggccgccctt ttttttttt ttttgggata tgacctttat tgaacttatc caccagagtg 60
gaaataatgt ctgtacaaaa ccaaatgttt gttactataa cttctgcatc acaattaaaa 120
tccaaacagt tttttaaaaa cagtcaactc aatcaaaacc cactacttca gaatcaatag 180
cttctttgaa gccacagtaa cacttaaata tggttaagac tcgaatgcan aaatttggtt 240
ggttggaaag ctaattaaac ttccaacttg ctcaaataga attacaaaaa ggcaaaattg 300
tgtttttcac agagatacag tccactggaa tcaccaacac tggacagctg ttagagtatt 360
tagagtcctg agataacaag gaatccaggc atcctttana cagtcttctg ttgtcctttc 420
ttcccaatca gagatttgtg gatgtgtgga atgacaccac caccagcaat tgtagccttg 480
atgagagaat ccaattcttc atctccacga atagcaagtt gcaagtgacg aggggtaata 540
cgctttacct ttaagtcttt tgatgcattt cctgccagt 579

<210> 561
<211> 541
<212> DNA
<213> Homo sapiens

<400> 561
ggccgcgtcg acgagccgca gctatggagc cgcaggagga gagagaaacg caggttgctg 60
cgtggttaaa aaaaatattt ggagatcatc ctattccaca gtatgaggtg aacccacgga 120
ccacagagat tttacatcac ctttcagaac gcaacagggt ccgggacagg gatgtctacc 180
tggtaataga ggacttgaag cagaaagcaa gtgaatacga gtcagaagcc aagtatcttc 240
aagaccttct catggagagt gtgaattttt cccccgccaa tctctctagc actggttcca 300
ggtatctgaa tgctttggtt gacagtgcgg tggcccttga aacaaaggat acctcgctag 360
ctagttttat ccctgcagtg aatgatttga cctctgatct ctttcgtacc aaatcgctag 420
gtgaagaaat caagattgaa ctggaaaaac ttgaaaaaaa tttaactgca actttagtat 480
tagaaaaatg tctacaagag gatgtcaaga aagcagagtt gcatctgtct acagaaaggg 540
c 541

<210> 562
<211> 440
<212> DNA
<213> Homo sapiens

<400> 562
ggccgcgtcg acgaagtgac atcgtcttta aaccctgcgt ggcaatccct gacgcaccgc 60
cgtgatgccc agggaagaca gggcgacctg gaagtccaac tacttcctta agatcatcca 120
actattggat gattatccga aatgtttcat tgtgggagca gacaatgtgg gctccaagca 180
gatgcagcag atccgcatgt cccttcgtgg gaaggctgtg gtgctgatgg gcaagaacac 240
catgatgcgc aaggccatcc gagggcacct ggaaaacaac ccagctctgg agaaactgct 300
gcctcatatc cgggggaatg tgggctttgt gttcaccaag gaggacctca ctgagatcag 360
ggacatgttg ctggccaata aggtgccagc tgctgcccgt gctggtgcca ttgccccatg 420
tgaagtcact gtgccagccc 440

<210> 563
<211> 569
<212> DNA
<213> Homo sapiens

<400> 563
ggccgcgtcg acgaagtgac atcgtcttta aaccctgcgt ggcaatccct gacgcaccgc 60
cgtgatgccc agggaagaca gggcgacctg gaagtccaac tacttcctta agatcatcca 120
actattggat gattatccga aatgtttcat tgtgggagca gacaatgtgg gctccaagca 180
gatgcagcag atccgcatgt cccttcgtgg gaaggctgtg gtgctgatgg gcaagaacac 240
catgatgcgc aaggccatcc gagggcacct ggaaaacaac ccagctctgg agaaactgct 300
gcctcatatc cgggggaatg tgggctttgt gttcaccaag gaggacctca ctgagatcag 360
ggacatgttg ctggccaata aggtgccagc tgctgcccgt gctggtgcca ttgccccatg 420
tgaagtcact gtgccagccc agaacactgg tctcgggccc gagaagacct ccttttcca 480
ggctttaggt atcaccacta aaatctccag ggcaccatt gaaatcctga gtgatgtgca 540

gctgatcaag actggagaca aagtgggag 569

<210> 564
<211> 584
<212> DNA
<213> Homo sapiens

<400> 564
ggccgcgtcg acctggcggc ggcagcatgg cggcgggggc ggctgaggca gctgtagcgg 60
ccgtggagga ggtcggctca gccgggcagt ttgaggagct gctgcgcctc aaagccaagt 120
ccctccttgt ggtccatttc tgggcaccat gggctccaca gtgtgcacag atgaacgaag 180
ttatggcaga gttagctaaa gaactccctc aagtttcatt tgtgaagttg gaagctgaag 240
gtgttcctga agtatctgaa aaatatgaaa ttagctctgt tcccactttt ctgtttttca 300
agaattctca gaaaatcgac cgattagatg gtgcacatgc cccagagttg accaaaaaaa 360
agttcagcga catgcatcta gtggctcctt cctacccagc gctaatgaac atcttaaaga 420
agatctcaac cttcgcttga agaaattgac tcatgctgcc ccctgcatgc tgtttatgaa 480
aggaactcct caagaaccac gctgtggttt cagcaagcag atggtggaaa ttcttcacaa 540
acataatatt cagtttagca gttttgatat cttctcagat gaag 584

<210> 565
<211> 496
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 468
<223> n = A,T,C or G

<400> 565
ggccgccctt tttttttttt ttttttaaag aagtaagcct ttatttcctt gttttgcaaa 60
taaaactggc taagttggtt gctttttggt gattagtcaa agagaccaaa tcccatatcc 120
tcgtccgact cctccgactc ttccttggct tcaaccttag ctggggctgc agcagcagca 180
ggagcagctg tggtggcagc agccacaggg gcagcagcca caaaggcaga tggatcagcc 240
aagaaggcct tgaccttttc agcaagtggg aaggtgtaat ccgtctccac agacaaggcc 300
aggactcgtt tgtacccgtt gatgatagaa tggggtactg atgcaacagt tgggtagcca 360
atctgcagac agacactggc aacattgcgg acaccctcca ggaagcgaga atgcagagtt 420
tcctctgtga tatcaagcac ttcagggttg tagatgctgc cattgtcnaa cacctgctgg 480
atgaccagcc caaagg 496

<210> 566
<211> 139
<212> DNA
<213> Homo sapiens

<400> 566
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgagggggc 139

<210> 567
<211> 247
<212> DNA
<213> Homo sapiens

<400> 567
ggccgcgtcg acgcagccat caggtaagcc aagatgggtg catacaagta catccaggag 60
ctatggagaa agaagcagtc tgatgtcatg cgctttcttc tgagggtccg ctgctggcag 120
taccgccagc tctctgctct ccacagggct ccccgcccca cccggcctga taaagcgcgc 180
cgactgggct acaaggccaa gcaaggttac gttatatata ggattcgtgt tcgccgtggt 240
ggccgaa 247

<210> 568
<211> 421
<212> DNA
<213> Homo sapiens

<400> 568
ggccgcgtcg actggggcgt ctcgcgcaaa cgtccataac tgaaagtagc taaggcaccc 60
cagccggagg aagtgagctc tcctggggcg tggttgttcg tgatccttgc atctgttact 120
tagggtcaag gcttgggtct tgccccgcag acccttggga cgacccggcc ccagcgcagc 180
tatgaacctg gagcgagtgt ccaatgagga gaaattgaac ctgtgccgga agtactacct 240
ggggggggttt gctttcctgc cttttctctg gttggtcaac atcttctggt tcttccgaga 300
ggccttcctt gtcccagcct acacagaaca gagccaaatc aaaggctatg tctggcgctc 360
agctgtgggc ttcctcttct gggtgatagt gctcacctcc tggatcacca tcttccagat 420
c 421

<210> 569
<211> 466
<212> DNA
<213> Homo sapiens

<400> 569
ggccgcggta gaatcgcgtg aataaaagat tttattcagt ttccagaaag agggggaat 60
gaaagacccc accataaggc ttagcaagct agctgcagta acgccatttt gcaaggcatg 120
aaaaagtacc agagctgagt tctcaaaagt cacaaggaag tttagttaaa gaataaggct 180
gaacaaaact gggacagggg ccaaacagga tatctgtggt cgagcacctg ggccccggct 240
cagggccaag aacagatggt actcagataa agcgaaacta gcaacagttt ctggaaagtc 300
ccacctcagt ttcaagttcc ccaaaagacc gggaaaaacc ccaagcctta tttaaactaa 360
ccaatcagct cgcttctcgc ttctgtaacc gcgctttttg ctcccccagcc ctataaaaag 420
ggtaaaaacc ccacactcgg tgcgccagtc atccgataga ctgagt 466

<210> 570
<211> 572
<212> DNA
<213> Homo sapiens

<400> 570
ggccgcgtcg accctaacgc tgccaacatg gtgttcaggc gcttcgtgga ggttggccgg 60
gtggcctatg tctcctttgg acctcatgcc ggaaaattgg tcgcgattgt agatgttatt 120
gatcagaaca gggctttggt cgatggacct tgcactcaag tgaggagaca ggccatgcct 180
ttcaagtgca tgcagctcac tgatttcatc ctcaagtttc cgcacagtgc ccaccagaag 240
tatgtccgac aagcctggca gaaggcagac atcaatacaa aatgggcagc cacacgatgg 300
gccaagaaga ttgaagccag agaaaggaaa gccaagatga cagattttga tcgttttaaa 360
gttatgaagg caaagaaaat gaggaacaga ataatcaaga atgaagttaa gaagcttcaa 420
aaggcagctc tcctgaaagc ttctcccaaa aaagcacctg gtactaaggg tactgctgct 480
gctgctgctg ctgctgctgc tgctgctgct gctgctgctg ctgctgctgc taaagttcca 540
gcaaaaaaga tcaccgccgc gagtaaaaag gc 572

<210> 571
<211> 243
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 71, 147, 150, 201, 213, 225, 231
<223> n = A,T,C or G

<400> 571
ggccgcccctt tttttttttt tttttttttt ccctacaaaa taatttattg gaacacacag 60
ctacagcact ntatgtacaa gcacattgac gctcctgact atcctcaact aggggaccct 120
tttcttcccc cttgccttgc ggacctnttn tatcaaatct ttcaggtact ggatctcctt 180
ggccagggaa tccgccctct nttttagagc ctngttcttc ttttncagct ntttgcactc 240

acc 243

<210> 572
<211> 139
<212> DNA
<213> Homo sapiens

<400> 572
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgagggggc 139

<210> 573
<211> 492
<212> DNA
<213> Homo sapiens

<400> 573
ggccgcgtcg accttgagga agcagtctcg tgtcctccgt gtgaaggcag ctggatcact 60
tcccgcagtc cttgggcagc gctttgctgt ggaacacgag agctcctcct caggggcctg 120
gcactcacct tctattctgt atgatgtatt tggttaaaca ctgtcaaata atagagatgt 180
gccagattta gattttctta ccctaatctg tttaatattg taactttatt ccatttgaaa 240
gtgtcaagcc cattcagata agctataatc tggtctttaa ggaacacaac tttaaaactg 300
cagctttctt ttatataaat caagcctctg ttaacttgaa ttccttatag tacatatttt 360
cccatctgta atgacgaaat tttgattcta atattttttc tattatttat aagtgcaaat 420
tttttaaaaa agtgtacagc tttctaaaag taataaaggt ttagcataaa tacaaaaaaa 480
aaaaaaaagg gc 492

<210> 574
<211> 88
<212> DNA
<213> Homo sapiens

<400> 574
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaaccattc 60
gtagacgacc tgcttctggg gtcgacgc 88

<210> 575
<211> 325
<212> DNA
<213> Homo sapiens

<400> 575
ggccgcgtcg accgagcacc tgggccccgg ctcagggcca agaacagatg gtactcagat 60
aaagcgaaac tagcaacagt ttctggaaag tcccacctca gtttcaagtt ccccaaaaga 120
ccgggaaaaa ccccaagcct tatttaaact aaccaatcag ctcgcttctc gcttctgtaa 180
ccgcgctttt tgctccccag ccctataaaa agggtaaaaa ccccacactc ggtgcgccag 240
tcatccgata gactgagtcg cccgggtacc cgtgttccca ataaagcctt ttgctgtttg 300
catccgaaaa aaaaaaaaaa agggc 325

<210> 576
<211> 491
<212> DNA
<213> Homo sapiens

<400> 576
ggccgccctt tttttttttt tttgggggag agaagtttat tcatacacaa aggggcacgc 60
caagggcgcc agtctagggt tacaccacgt gaaacagtag aaaattcaac caggaaagca 120
ggaaattcag tgaagctact acaaagtggg gcgagtggac tgaaaactag gattttcctt 180
gcaagtttct tttcataaaa tttttacttt atgaattaaa tacattgaga aacagtgaaa 240
atatatttac agtcatttga agtgggcact actaacatat ttaatttaaa aaaatctttg 300
ctgtttcttt gcctgtttct ttcaaagaga attttaaata tgactttagc ttttaaaaat 360

acaataagga aataattaca ttcttaatat gaaaacattt tacaacgtat caccatggtc 420
aattaattct gaatatcact taaaagttga tgttaaaatg taaagtgaat atttcctttc 480
ttggtcgacg c 491

<210> 577
<211> 505
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 104, 108, 113, 163, 199, 229, 343, 359, 370, 389, 489, 496
<223> n = A,T,C or G

<400> 577
ggccgccctt tttttttttt tttttttttt gactgtccta aattgtttat taagtatgaa 60
ttttacaaac tttacttata ttagcggtaa cggtggagct gganagtntt gcnccttctc 120
caagctgccc ggcgagagcc accaatagtg tggtggaact tgnggccctt tccaaggcca 180
cggctctttc ggcctgcana tgtcagccca cgcatctccc tgtgcttgng gactggtttg 240
gtgatccact gggtgtcagg atttcttctg atagctttat ggaatggatc aatgaggata 300
acctcaaaaa atttgtatgt ggaatcttca ccaacccagt aanaattcag gactctcana 360
gccccacagn ggcgtccagc tcgctcctnt gcaacggact gaaggcttcg agcaaacttt 420
agctggttaa caccatgatg gacaggcttg ccgtaagttg cacccttagg aactgggcgt 480
tttcggccnc cacggngaac acgaa 505

<210> 578
<211> 64
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 12
<223> n = A,T,C or G

<400> 578
ggccgccctt tntttttttt tttttttttt tttttttttt tttttttttt ttttttttccc 60
cccc 64

<210> 579
<211> 383
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 256
<223> n = A,T,C or G

<400> 579
ggccgcgtcg actgagtctt gagactgaaa gatttagcca taatgtaaac tgcctcaaat 60
tggactttgg gcataaaaga acttttttat gcttaccatc tttttttttc tttaacagat 120
ttgtatttaa gaattgtttt taaaaaattt taagatttac acaatgtttc tctgtaaata 180
ttgccattaa atgtaaataa ctttaataaa acgtttatag cagttacaca gaatttcaat 240
cctagtatat agtacntagt attataggta ctataaaccc taattttttt tatttaagta 300
cattttgctt tttaaagttg attttttttct attgttttta gaaaaaataa aataactggc 360
aaatatatca ttgaggtcga cgc 383

<210> 580
<211> 541
<212> DNA
<213> Homo sapiens

<400> 580
ggccgcgtcg acgccaggga agaggaggga gacagagaag tggttctgta tggctaggac 60
caccctacta cacgctcagc tgccaacagt ggattgagtt tgggggtagc tccaagcctt 120
ctcctgcctc tgaactgagc caaaccttca gtgccttcca gaagggagaa aggcagaagc 180
ctgtgtggag tgtgctgtgt acacatctgc tttgttccac acacatgcag ttcctgcttg 240
ggtgcttatc aggtgccaag ccctgttctc ggtgctggga gtacagcagt gagcaaagga 300
gacaatattc cctgctcaca gagatgacaa actggcatcc ttgagctgac aacacttttc 360
catgaccata ggtcactgtc tacactgggt acactttgta ccagtgtcgg cctccactga 420
tgctggtgct caggcacctc tgtccaagga caatcccttt cacaaacaaa ccagctgcct 480
ttgtatcttg taccttttca gagaaaggga ggtatccctg tgccaaaggc tccaggcctc 540
t 541

<210> 581
<211> 435
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 171, 230, 399, 404, 408, 410, 425
<223> n = A,T,C or G

<400> 581
ggccgcgtcg acttttttttt ttttgggata tgacctttat tgaacttatc caccagagtg 60
gaaataatgt ctgtacaaaa ccaaatgttt gttactataa cttctgcatc acaattaaaa 120
tccaaacagt tttttaaaaa cagtcaactc aatcaaaacc cactacttca naatcaatag 180
cttctttgaa gccacagtaa cacttaaata tggttaagac tcgaatgcan aaatttggtt 240
ggttggaaag ctaattaaac ttccaacttg ctcaaataga attacaaaaa ggcaaaattg 300
tgtttttcac agagatacag tccactggaa tcaccaacac tggacagctg ttagagtatt 360
tagagtcctg agataacaag gaatccaggc atcctttana cagncttntn ttgtcctttc 420
ttccnaatca gagat 435

<210> 582
<211> 132
<212> DNA
<213> Homo sapiens

<400> 582
aagggggagg attgggaaga caatagcagg catgctgggg atgcggtggg ctctatggct 60
tctgaggcgg aaagaaccag ctggggctct agggggtatc cccacgcgcc ctgtagcggc 120
gcattaagcg cg 132

<210> 583
<211> 438
<212> DNA
<213> Homo sapiens

<400> 583
ggccgcgtcg acccaggatc tcgggctcgg aacgagactg cacggattgt tttaagaaaa 60
tggcagacaa accagacatg gggaaatcg ccagcttcga taaggccaag ctgaagaaaa 120
cggagacgca ggagaagaac accctgccga ccaaagagac cattgagcag gagaagcgga 180
gtgaaatttc ctaagatcct ggaggatttc ctaccccgt cctcttcgag accccagtcg 240
tgatgtggag gaagagccac ctgcaagatg gacacgagcc acaagctgca ctgtgaacct 300
gggcactccg cgccgatgcc accggcctgt gggtctctga agggaccccc ccccaatcgg 360
actgccaaat tctccggttt gccccgggat attatagaaa attatttgta tgaataatga 420
aaataaaaca cacctcgt 438

<210> 584
<211> 72
<212> DNA
<213> Homo sapiens

<400> 584
ctagtccagt gtggtggaat tctgcagata tccagcacag tggcggccgc gtcgacaact 60
acacttacag gt 72

<210> 585
<211> 514
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 454
<223> n = A,T,C or G

<400> 585
ggccgcgtcg accagaattt cggtggtgca ggccctggtt ctgacccaac agtatcacca 60
actcaaatca atagatccag aagaagtaga atcgcgtgaa taaaagattt tattcagttt 120
ccagaaagag gggggaatga aagaccccac cataaggctt agcaagctag ctgcagtaac 180
gccattttgc aaggcatgaa aaagtaccag agctgagttc tcaaaagtca caaggaagtt 240
tagttaaaga ataaggctga acaaaactgg gacaggggcc aaacaggata tctgtggtcg 300
agcacctggg ccccggctca gggccaagaa cagatggtac tcagataaag cgaaactagc 360
aacagtttct ggaaagtccc acctcagttt caagttcccc aaaagaccgg gaaaaacccc 420
aagccttatt taaactaacc aatcagctcg cttntcgctt ctgtaaccgc gctttttgct 480
ccccagccct ataaaaaagg gtaaaaaccc caca 514

<210> 586
<211> 490
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 48, 69, 167, 294, 302, 310, 347, 353, 378, 404, 430, 457
<223> n = A,T,C or G

<400> 586
ggccgccctt tttttttttt tttcccaata cttatttttt attactgnac aaaaagcaca 60
ctctccctnt ttttgtctct cccaccaacg gcaccccccc acccccaacc caagaggact 120
atacatggag tgcagggaca gagtgaccag gaggcctttg tccggcnccc tgcccacagg 180
ctgagctcag ccccaggccc tttcaggcat ctagacactc ccatagcctg tcaggctggg 240
gcaaggagat cccaggtcac acatactcct tggaagagtt ggacttaggg taanagcggg 300
gngcacggtn cccagccttg ctctcattcc caggacagga acagganagc agngcacctc 360
ccaggatgac tagggcanac cctgcccagc caataaagat ggcngggcca aactcatact 420
taatgttggn agggatcaaa gggttataaa agtctgngac aatctgatgg ccataccagg 480
agcaagctac 490

<210> 587
<211> 545
<212> DNA
<213> Homo sapiens

<400> 587
ggccgcgtcg acgtcgtcgg ggtttcctgc ttcaacagtg cttggacgga acccggcgct 60
cgttccccac cccggccggc cgcccatagc cagccctccg tcacctcttc accgcaccct 120
cggactgccc caaggccccc gccgccgctc cagcgccgcg cagccaccgc cgccgccgcc 180
gcctctcctt agtcgccgcc atgacgaccg cgtccacctc gcaggtgcgc cagaactacc 240
accaggactc agaggccgcc atcaaccgcc agatcaacct ggagctctac gcctcctacg 300
tttacctgtc catgtcttac tactttgacc gcgatgatgt ggctttgaag aactttgcca 360
aatactttct tcaccaatct catgaggaga gggaacatgc tgagaaactg atgaagctgc 420
agaaccaacg aggtggccga atcttccttc aggatatcaa gaaaccagac tgtgatgact 480
gggagagcgg gctgaatgca atggagtgtg cattacattt ggaaaaaaat gtgaatcagt 540

cacta 545

<210> 588
<211> 501
<212> DNA
<213> Homo sapiens

<400> 588
ggccgcgtcg acgggaagat ggcggacatt cagactgagc gtgcctacca aaagcagccg 60
accatctttc aaaacaagaa gagggtcctg ctgggagaaa ctggcaagga gaagctcccg 120
cggtactaca agaacatcgg tctgggcttc aagacaccca aggaggctat tgagggcacc 180
tacattgaca agaaatgccc cttcactggt aatgtgtcca ttcgagggcg gatcctctct 240
ggcgtggtga ccaagatgaa gatgcagagg accattgtca tccgccgaga ctatctgcac 300
tacatccgca agtacaaccg cttcgagaag cgccacaaga acatgtctgt acacctgtcc 360
ccctgcttca gggacgtcca gatcggtgac atcgtcacag tgggcgagtg ccggcctctg 420
agcaagacag tgcgcttcaa cgtgctcaag gtcaccaagg ctgccggcac caagaagcag 480
ttccagaagt tctgaggctg g 501

<210> 589
<211> 453
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 47, 109, 262, 342, 397
<223> n = A,T,C or G

<400> 589
ggccgccctt tttttttttt tttgtcagca aaaatctttt taataanaga gtaggatcca 60
gggttagttt ttgtagcctc ggctggcccg tcggcctctg gcacgctcna acttccggcc 120
cttggagcgg acgtagggtt tggtgtggct gtgcggggtt cctggggcct tgccgaaatg 180
ccggtacacc tctcggccct tgcgaggacc ggagagcagg acagtgccac agcccttagg 240
ggagtccagg gccagctggt cnaaagtgag gatcttgccc cctgccctga ggatgcggct 300
gcgggcccgg ctggtcacgc gcagtgcaca taccttcagt tngggtacct cctgaacccg 360
cacatcatca gttatggtcc ccacaaccac ggccgtnttg ttttcccggc caggaagctt 420
catcttccgg atcatccggg aaagggacag agg 453

<210> 590
<211> 564
<212> DNA
<213> Homo sapiens

<400> 590
ggccgcgtcg acaggagagg ttgtggtgct agtttctcta agccatccag tgccatcctc 60
gtcgctgcag cgacacacgc tctcgccgcc gccatgactg agcagatgac ccttcgtggc 120
accctcaagg gccacaacgg ctgggtaacc cagatcgcta ctaccccgca gttcccggac 180
atgatcctct ccgcctctcg aggtacggac taagataaga ccatcatcat gtggaaactg 240
accagggatg agaccaacta tggaattcca cagcgtgctc tgcggggtca ctcccacttt 300
gttagtgatg tggttatctc ctcagatggc cagtttgccc tctcaggctc ctgggatgga 360
accctgcgcc tctgggatct cacaacgcaa gggcaccacc acgaggcgat ttgtgggcca 420
taccaaggat gtgctgagtg tggccttctc ctctgacaac cggcagattg tctctggatc 480
tcgagataaa accatcaagc tatggaatac cctgggtgtg tgcaaataca ctgtccagga 540
tgagagccac tcagagtggg tgtc 564

<210> 591
<211> 409
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature

<222> 290, 379, 381
<223> n = A,T,C or G

<400> 591
ggccgcgtcg acctgattta cagctcttgg tttctcccag acatgttggt gggagagatt 60
ttggttttta aggggttgtt agatggagta aattttcttt tttttttttt taactaaaaa 120
ggggtcacag aatttcagca gttctctgat ttttatattt tattcctctt cctatccaat 180
ccctgccttt tgagtccagg tggtaagtac attttcttta acgtttttcc tgcttttctt 240
cccaaatgtg tctttttctt tgggctactg taccctgctt ccagtgctgn ccccggcata 300
ggtccatctc tgcagaagcc atttcaggag tacctggagg ctcaacggca gaagcttcac 360
cacaaaagcg aaatgggcnc nccacaggga gaaaactggt tgtcctgga 409

<210> 592
<211> 511
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 28, 175, 437, 443, 460, 466, 470, 491, 501
<223> n = A,T,C or G

<400> 592
ggccgccctt tttttttttt tttagttngg gatatgacct ttattgaact tatccaccag 60
agtggaaata atgtctgtac aaaaccaaat gtttgttact ataacttctg catcacaatt 120
aaaatccaaa cagtttttta aaaacagtca actcaatcaa aacccactac ttcanaatca 180
atagcttctt tgaagccaca gtaacactta aatatggtta agactcgaat gcaaaaattt 240
ggttggttgg aaagctaatt aaacttccaa cttgctcaaa tagaattaca aaaaggcaaa 300
attgtgtttt tcacagagat acagtccact ggaatcacca acactggaca gctgttagag 360
tatttagagt cctgagataa caaggaatcc aggcatcctt taaacagtct tctgttgtcc 420
tttcttccca atcaganatt tgnggatgtg tggaatgacn ccaccnccan caattgtagc 480
cttgatgaga naatccaatt nttcatcttc a 511

<210> 593
<211> 536
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 496
<223> n = A,T,C or G

<400> 593
ggccgcgtcg acatcgcggt gcgacgaagg agtaggtggt gggatctcac cgtgggtccg 60
attagccttt tctctgcctt gcttgcttga gcttcagcgg aattcgaaat ggctggcggt 120
aaggctggaa aggactccgg aaaggccaag acaaaggcgg tttcccgctc gcagagagcc 180
ggcttgcagt tcccagtggg ccgtattcat cgacacctaa aatctaggac gaccagtcat 240
ggacgtgtgg gcgcgactgc cgctgtgtac agcgcagcca tcctggagta cctcaccgca 300
gaggtacttg aactggcagg aaatgcatca aaagacttaa aggtaaagcg tattacccct 360
cgtcacttgc aacttgctat tcgtggagat gaagaattgg attctctcat caaggctaca 420
attgctggtg gtggtgtcat tccacacatc cacaaatctc tgattgggaa gaaaggacaa 480
cagaagactg tctaangatg cctggattcc ttgttatctc aggactctaa atactc 536

<210> 594
<211> 513
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 156, 163, 259, 370, 410, 411, 450, 499, 501

<223> n = A,T,C or G

<400> 594
ggccgcccctt ttttttttt ttttttttt ttttttggca tgcaaatttg agtttatttt 60
taaatagtgc aatgaaatac acattgttcc taaaaaggaa attctgacat ttaaatgaaa 120
tttgaaaacc aaatagtaag aaatggaaag agatanttgt aanaatccat ttaccaattt 180
tacagctaaa aattaaagtg aagtagaaat agcaaaagat aacagacaaa tatattattt 240
taggtcatta atttatagng ccttatcatc ttaagttata aatagaataa ggatttttgtt 300
atataaaaac tatcaaaaaa gtatcagtga aaagacatga cctccatgaa atgtgctgag 360
tggccagggn ggaaatgttg tcaaaatgca gcggccctgg ctgggcaacn ncagcctcca 420
tgacagtttg ttaacttgtc tttcgtaggn ggccacagaa agttccataa acaagtgtac 480
tgtttaacca attcccttnt nttaccacaa caa 513

<210> 595
<211> 487
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 30, 58, 78, 283, 286, 301, 323, 331, 389, 391
<223> n = A,T,C or G

<400> 595
ggccgcccctt ttttttttt tttctctttn aattgtcatt tttatagctc cccaccgnag 60
ctgcccccca cccttccntt cgatgacaac gtttgcaggc ttcagggggga ccagggaaca 120
aagctggggc ctggcagccc cactacgctg ccagccgggg agaacaagtc acaattacaa 180
attatcacaa caattagcgc ctgtacttgg gggatctgca aattgaggag gccccagctc 240
ctcattgtac acgggtctat ttggcagtga ccttgctctg ganacnatga tattccttca 300
ncctgaggga attgatgttg atnaacccgg nggcatcagt tggctcataa tcaccctgca 360
cgttcatgct caccagctcc tcattgtana nagacagtgg ggactcccgg ccgaggatgt 420
acacctggcc cttgaggacg gacacctgca ctttcccttc cactcgctcc tgggacttgg 480
cgatgca 487

<210> 596
<211> 139
<212> DNA
<213> Homo sapiens

<400> 596
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgagggggc 139

<210> 597
<211> 368
<212> DNA
<213> Homo sapiens

<400> 597
ggccgcgaaa aattttgaga tatttaaaaa caaacaggaa agtacggcaa ggaacatgaa 60
ccaacatact tgctccatta attccttttg ctttaccatc ttgcttcagg tttttttaaa 120
atgaaatatt atacaattga acccctgata ttattttcct ttctttttag ctagaagtaa 180
cagttatcct gaatttgttg agacctctat tatgtctatc cgtaaaaaat atatagcatt 240
atatgataaa tattaaaact gtatattgca tagtattaga ctgtatattg tatattatca 300
tgtaatatta aaactttagt atattaaaac cttatataaa aagtaaaaaa aaaaaaaaaa 360
aaaagggc 368

<210> 598
<211> 532
<212> DNA
<213> Homo sapiens

<400> 598
ggccgcgtcg acgtcgcgac gttcgcccgc tcgctctgag gctcctgaag ccgaaaccag 60
ctagactttc ctccttcccg cctgcctgta gcggcgttgt tgccactccg ccaccatgtt 120
cgaggcgcgc ctggtccagg gctccatcct caagaaggtg ttggaggcac tcaaggacct 180
catcaacgag gcctgctggg atattagctc cagcggtgta aacctgcaga gcatggactc 240
gtcccacgtc tctttggtgc agctcaccct gcggtctgag ggcttcgaca cctaccgctg 300
cgaccgcaac ctggccatgg gcgtgaacct caccagtatg tccaaaatac taaaatgcgc 360
cggcaatgaa gatatcatta cactaagggc cgaagataac gcggatacct tggcgctagt 420
atttgaagca ccaaaccagg agaaagtttc agactatgaa atgaagttga tggatttaga 480
tgttgaacaa cttggaattc cagaacagga gtacagctgt gtagtaaaga tg 532

<210> 599
<211> 512
<212> DNA
<213> Homo sapiens

<400> 599
ggccgcgtcg acggaagatg gcggacattc agactgagcg tgcctaccaa aagcagccga 60
ccatctttca aaacaagaag agggtcctgc tgggagaaac tggcaaggag aagctcccgc 120
ggtactacaa gaacatcggt ctgggcttca agacacccaa ggaggctatt gagggcacct 180
acattgacaa gaaatgcccc ttcactggta atgtgtccat tcgagggcgg atcctctctg 240
gcgtggtgac caagatgaag atgcagagga ccattgtcat ccgccgagac tatctgcact 300
acatccgcaa gtacaaccgc ttcgagaagc gccacaagaa catgtctgta cacctgtccc 360
cctgcttcag ggacgtccag atcggtgaca tcgtcacagt gggcgagtgc cggcctctga 420
gcaagacagt gcgcttcaac gtgctcaagg tcaccaaggc tgccggcacc aagaagcagt 480
tccagaagtt ctgaggctgg acatcggccc gc 512

<210> 600
<211> 489
<212> DNA
<213> Homo sapiens

<400> 600
ggccgcgtcg acggtccttc cgaggaagct aaggctgcgt tggggtgagg ccctcacttc 60
atccggcgac tagcaccgcg tccggcagcg ccagccctac actcgcccgc gccatggcct 120
ctgtctccga gctcgcctgc atctactcgg ccctcattct gcacgacgat gaggtgacag 180
tcacggagga taagatcaat gccctcatta aagcagccgg tgtaaatgtt gagccttttt 240
ggcctggctt gtttgcaaag gccctggcca acgtcaacat tgggagcctc atctgcaatg 300
taggggccgg tggacctgct ccagcagctg gtgctgcacc agcaggaggt cctgcccccct 360
ccactgctgc tgctccagct gaggagaaga aagtggaagc aaagaaagaa gaatccgagg 420
agtctgatga tgacatgggc tttggtcttt ttgactaaac ctcttttata acatgttcaa 480
taaaaagct 489

<210> 601
<211> 550
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 498
<223> n = A,T,C or G

<400> 601
ggccgcgtcg acaaaaaagt agttcagtag gaaattctta aatatttaaa ggcccttcca 60
cataaaaatt taagaatttc ctactgaact acttaaatat ttaaaggccc ttccacataa 120
aaatttaaga atttcctact gaactacttt tttggtgaaa gaaaaataca aactttccaa 180
agaataaaga gaacaaaaac attacatatc aaaatcaatt agatataata taaaacaata 240
agggaggaaa attcatagcc ttaaactctt atggagggac atccaattgg agaactagaa 300
aaagaagaga aaggtaaaac taaaagagta tatatgaaga caagataaag aaaaagtcag 360
aaattaataa taagaaaaaa gaaaaaatct cattaatgag tcaaaattga actttgttga 420

aaaattaaca aaagggacta ctactggcca ccttcataag gatagaaaaa gggagaaagc 480
aaaataaagt ttaaaatnac tagagagaaa caatcactga agtacgaaaa atttaagtca 540
taaaaaacta 550

<210> 602
<211> 494
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 443, 463
<223> n = A,T,C or G

<400> 602
ggccgcgtcg accgcgcttg cggacgcggc ggcattaaac ggttgcaggc gtagcagagt 60
ggtcgttgtc tttctaggtc tcagccggtc gtcgcgacgt tcgcccgctc gctctgaggc 120
tcctgaagcc gaaaccagct agactttcct ccttcccgcc tgcctgtagc ggcgttgttg 180
ccactccgcc accatgttcg aggcgcgcct ggtccagggc tccatcctca agaaggtgtt 240
ggaggcactc aaggacctca tcaacgaggc ctgctgggat attagctcca gcggtgtaaa 300
cctgcagagc atggactcgt cccacgtctc tttggtgcag ctcaccctgc ggtctgaggg 360
cttcgacacc taccgctgcg accgcaacct ggccatgggc gtgaacctca ccagtatgtc 420
caaaatacta aaatgcgccg gcnatgaaga tatcattaca ctnagggccg aagataacgc 480
ggataccttg gcgc 494

<210> 603
<211> 461
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 72, 83, 86, 148, 227, 234, 263, 299, 324, 327, 347, 364,
412, 424, 439, 455
<223> n = A,T,C or G

<400> 603
ggccgccctt tttttttttt tttaggaagt aagcctttat ttccttgttt tgcaaataaa 60
actggctaag tnggttgctt ttnggngatt agtcaaagag accaaatccc atatcctcgt 120
ccgactcctc cgactcttcc ttggcttnaa ccttagctgg ggctgcagca gcagcaggag 180
cagctggggg ggcagcagcc acaggggcag cagccacaaa ggcagangga tcanccaaga 240
aggccttgac cttttcagca agngggaagg tgtaatccgt ctccacagac aaggccagna 300
ctcgtttgta cccgttgatg atanaanggg gtactgatgc aacagtnggg tagccaatct 360
gcanacagac actggcaaca ttgcggacac cctccaggaa gcgagaatgc anagtttcct 420
ctgngatatc aagcacttna gggttgaaga tgctnccatt g 461

<210> 604
<211> 419
<212> DNA
<213> Homo sapiens

<400> 604
ggccgcgtcg acgctttctc caccagaagg gcacactttc atctaatttg gggtatcact 60
gagctgaaga caaagagaag gggggagaaaa cctagcagac caccatgtgc tatgggaagt 120
gtgcacgatg catcggacat tctctggtgg ggctcgccct cctgtgcatc gcggctaata 180
ttttgcttta ctttcccaat ggggaaacaa agtatgcctc cgaaaaccac ctcagccgct 240
tcgtgtggtt cttttctggc atcgtaggag gtggcctgct gatgctcctg ccagcatttg 300
tcttcattgg gctggaacag gatgactgct gtggctgctg tggccatgaa aactgtggca 360
aacgatgtgc gatgctttct tctgtattgg ctgctctcat tggaattgca ggatctggc 419

<210> 605
<211> 567

i)

<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 552
<223> n = A,T,C or G

<400> 605
ggccgcgtcg accggcgctc gttccccacc ccggccggcc gcccatagcc agccctccgt 60
cacctcttca ccgcaccctc ggactgcccc aaggcccccg ccgccgctcc agcgccgcgc 120
agccaccgcc gccgccgccg cctctcctta gtcgccgcca tgacgaccgc gtccacctcg 180
caggtgcgcc agaactacca ccaggactca gaggccgcca tcaaccgcca gatcaacctg 240
gagctctacg cctcctacgt ttacctgtcc atgtcttact actttgaccg cgatgatgtg 300
gctttgaaga actttgccaa atactttctt caccaatctc atgaggagag ggaacatgct 360
gagaaactga tgaagctgca gaaccaacga ggtggccgaa tcttccttca ggatatcaag 420
aaaccagact gtgatgactg ggagagcggg ctgaatgcaa tggagtgtgc attacatttg 480
gaaaaaaatg tgaatcagtc actactggaa ctgcacaaac tggccactga caaaaatgac 540
ccccatttgt gngacttcat tgagaca 567

<210> 606
<211> 381
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 373
<223> n = A,T,C or G

<400> 606
ggccgcgtcg actttttttt tgtctttgta caaaatttta ttaaaggtct ttagagagca 60
acatccagac tccagaatac agctgccaag gagaccctgt tatgctgtgg ggactggctg 120
gggcatggca ggcggctctg gcttcccacc cttctgttct gagatggggg tggtgggcag 180
tatctcatct ttgggttcca caatgctcac gtggtcaggc aggggcttct tagggccaat 240
cttaccagtt gggtcccagg gcagcatgat cttcaccttg atgcccagca caccctgtct 300
gagcaacacg tggcgcacag cagtgtcaac gtagtagtta acagggtctc cgctgtggat 360
catcaaggcc atncacaaac t 381

<210> 607
<211> 123
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 23, 32, 38, 42, 56, 62, 73, 82, 93
<223> n = A,T,C or G

<400> 607
ggccgccctt tttttttttt ttnaaataaa anaggaantt tnttaaaaga atacanaggt 60
tnttgcaaag atnccaacag cntgcaaggg gtnaacagct aaaatcaccc ttttctgaag 120
gac 123

<210> 608
<211> 486
<212> DNA
<213> Homo sapiens

<400> 608
ggccgcgtcg acgaggctga ctttctctcg gtgcgtccag tggagctctg agtttcgaat 60
cggcggcggc ggattccccg cgcgcccggc gtcggggctt ccaggaggat gcggagcccc 120

agcgcggcgt ggctgctggg ggccgccatc ctgctagcag cctctctctc ctgcagtggc 180
accatccaag gaaccaatag atcctctaaa ggaagaagcc ttattggtaa ggttgatggc 240
acatcccacg tcactggaaa aggagttaca gttgaaacag tcttttctgt ggatgagttt 300
tctgcatctg tcctcactgg aaaactgacc actgtcttcc ttccaattgt ctacacaatt 360
gtgtttgtgg tgggtttgcc aagtaacggc atggccctgt gggtctttct tttccgaact 420
aagaagaagc accctgctgt gatttacatg gccaatctgg ccttggctga cctcctctct 480
gtcatc 486

<210> 609
<211> 554
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 519
<223> n = A,T,C or G

<400> 609
ggccgcgtcg acggaatgtc ccgggtggag ctggctgagt cgcgcgctct gctccacccg 60
acggggctgt gtgtgctggg cctggctcgc ggcgaaccga gatggcagag cagtcggacg 120
aggccgtgaa gtactacacc ctagaggaga ttcagaagca caaccacagc aagagcacct 180
ggctgatcct gcaccacaag gtgtacgatt tgaccaaatt tctggaagag catcctggtg 240
gggaagaagt tttaagggaa caagctggag gtgacgctac tgagaacttt gaggatgtcg 300
ggcactctac agatgccagg gaaatgtcca aaacattcat cattggggag ctccatccag 360
atgacagacc aaagttaaac aagcctccgg aaactcttat cactactatt gattctagtt 420
ccagttggtg gaccaactgg gtgatccctg ccatctctgc agtggccgtc gccttgatgt 480
atcgcctata catggcagag gactgaacac cttcctcana agtcagcgca ggaagagcct 540
gctttggaca cggg 554

<210> 610
<211> 139
<212> DNA
<213> Homo sapiens

<400> 610
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaaccattc 60
gtagacgacc tgcttctggg tcggggtttc gtacgtagca gagcagctcc ctcgctgcga 120
tctattgaaa ggtcgacgc 139

<210> 611
<211> 129
<212> DNA
<213> Homo sapiens

<400> 611
agcaaggggg aggattggga agacaatagc aggcatgctg gggatgcggt gggctctatg 60
gcttctgagg cggaaagaac cagctggggc tctagggggt atccccacgc gccctgtagc 120
ggcgcatta 129

<210> 612
<211> 588
<212> DNA
<213> Homo sapiens

<400> 612
ggccgcggca gccatggcgc tcgctcttgc cggggagccg gcaccgcccg cgcccgcgcc 60
tccagaggac cacccggacg aggagatggg gttcactatc gacatcaaga gtttcctcaa 120
gccgggcgag aagacgtaca cgcagcgctg ccgcctcttc gtgggaaatc tgcccaccga 180
catcacggag gaggacttca agaggctctt cgaacgctat ggcgagccca gcgaagtctt 240
catcaaccgg gaccgtggct tcggcttcat ccgcttggaa tccagaaccc tggctgaaat 300
tgcaaaagca gagctggacg gcaccattct caagagcaga cctctacgga ttcgcttcgc 360

tacacatgga gcagccttga ctgtcaagaa cctttctcca gttgtttcca atgagctgct 420
agagcaagca ttttctcagt ttggtccagt agagaaagct gttgtggttg tggatgatcg 480
cggtagagct acaggaaaag gttttgtaga gtttgcagca aaacctcctg cacgaaaggc 540
tctggaaaga tgtggtgatg ggcattcttt gctaacaacg acccctcg 588

<210> 613
<211> 573
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 563
<223> n = A,T,C or G

<400> 613
ggccgcgtcg acggagaggt tgtggtgcta gtttctctaa gccatccagt gccatcctcg 60
tcgctgcagc gacacacgct ctcgccgccg ccatgactga gcagatgacc cttcgtggca 120
ccctcaaggg ccacaacggc tgggtaaccc agatcgctac taccccgcag ttcccggaca 180
tgatcctctc cgcctctcga gataagacca tcatcatgtg gaaactgacc agggatgaga 240
ccaactatgg aattccacag cgtgctctgc ggggtcactc ccactttgtt agtgatgtgg 300
ttatctcctc agatggccag tttgccctct caggctcctg ggatggaacc ctgcgcctct 360
gggatctcac aacgggcacc accacgaggc gatttgtggg ccataccaag gatgtgctga 420
gtgtggcctt ctcctctgac aaccggcaga ttgtctctgg atctcgagat aaaaccatca 480
agctatggaa taccctgggt gtgtgcaaat acactgtcca ggatgagagc cactcagagt 540
gggtgtcttg tgtccgcttc tcnccaacag cag 573

<210> 614
<211> 550
<212> DNA
<213> Homo sapiens

<400> 614
ggccgcgtcg accgagagtc gtcggggttt cctgcttcaa cagtgcttgg acggaacccg 60
gcgctcgttc cccaccccgg ccggccgccc atagccagcc ctccgtcacc tcttcaccgc 120
accctcggac tgccccaagg cccccgccgc cgctccagcg ccgcgcagcc accgccgccg 180
ccgccgcctc tccttagtcg ccgccatgac gaccgcgtcc acctcgcagg tgcgccagaa 240
ctaccaccag gactcagagg ccgccatcaa ccgccagatc aacctggagc tctacgcctc 300
ctacgtttac ctgtccatgt cttactactt tgaccgcgat gatgtggctt tgaagaactt 360
tgccaaatac tttcttcacc aatctcatga ggagagggaa catgctgaga aactgatgaa 420
gctgcagaac caacgaggtg gccgaatctt ccttcaggat atcaagaaac cagactgtga 480
tgactgggag agcgggctga atgcaatgga gtgtgcatta catttggaaa aaaatgtgaa 540
tcagtcacta 550

<210> 615
<211> 510
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 508
<223> n = A,T,C or G

<400> 615
ggccgcgtcg acaaaaaatt tatgatactc tccattgttc taaaagtgtt tacaagaaca 60
gttaaagcat aatgcagtaa cataaattag gaatgtttga gaaagaaaaa aagataaacc 120
aaaagttgga acataaaatg gaacaggaaa taataacacc tttccaaagg cgagtcctgt 180
gagtggatca caatctgtcc ctaagctttc aaactgcagt tacaaatgag aagccttgcc 240
agatgtttaa ctcactttgc tgaaagagaa agagaattag ttatttggaa gaaatacaat 300
tattctcaat actaacactg aaaagtaatt tctctgtagt gttcagatgt gacctcagca 360
gtatataggc aagagacaca acaaatttcg ggggggtgat gagttttgtg tttcttagat 420

taaacctcag tagaggttgc tgttgttaaa accatgatac agattgaaaa ggatagtctc 480
attgcatata gaacacatcc cagtggcngc 510

<210> 616
<211> 540
<212> DNA
<213> Homo sapiens

<400> 616
ggccgcgtcg acgtgctagt ttctctaagc catccagtgc catcctcgtc gctgcagcga 60
cacacgctct cgccgccgcc atgactgagc agatgaccct tcgtggcacc ctcaagggcc 120
acaacggctg ggtaacccag atcgctacta ccccgcagtt cccggacatg atcctctccg 180
cctctcgaga taagaccatc atcatgtgga aactgaccag ggatgagacc aactatggaa 240
ttccacagcg tgctctgcgg ggtcactccc actttgttag tgatgtggtt atctcctcag 300
atggccagtt tgccctctca ggctcctggg atggaaccct gcgcctctgg gatctcacaa 360
cgggcaccac cacgaggcga tttgtgggcc ataccaagga tgtgctgagt gtggccttct 420
cctctgacaa ccggcagatt gtctctggat ctcgagataa aaccatcaag ctatggaata 480
ccctgggtgt gtgcaaatac actgtccagg atgagagcca ctcagagtgg gtgtcttgtg 540

<210> 617
<211> 369
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 26, 33, 137, 153, 184, 190, 212, 260, 321, 339, 340, 341,
345, 350
<223> n = A,T,C or G

<400> 617
ggccgccctt tttttttttt tttatngtta ttnagttttt atttcataat cataaactta 60
actctgcaat ccagctaggc atgggaggga acaaggaaaa catggaaccc aaagggaact 120
gcagcgagag cacaaanatt ctaggatact gcnagcaaat ggggtggagg ggtgctctcc 180
tganctacan aaggaatgat ctggtggtta anataaaaca caagtcaaac ttattcgagt 240
tgtccacagt cagcaatggn gatcttcttg ctggtcttgc cattcctgga cccaaagcgc 300
tccatggcct ccacaatatt natgccttct ttcactttnn naaanaccan atgcttgcca 360
tccaaccac 369

<210> 618
<211> 453
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 433
<223> n = A,T,C or G

<400> 618
ggccgcgtcg accgagcgcc aagatcgtga agcccaatgg cgagaagccg gacgagttcg 60
agtccggcat ctcccaggct cttctggagc tggagatgaa ctcggacctc aaggctcagc 120
tcagggagct gaatattacg gcagctaagg aaattgaagt tggtggtggt cggaaagcta 180
tcataatctt tgttcccgtt cctcaactga aatctttcca gaaaatccaa gtccggctag 240
tacgcgaatt ggagaaaaag ttcagtggga agcatgtcgt ctttatcgct cagaggagaa 300
ttctgcctaa gccaactcga aaaagccgta caaaaaataa gcaaaagcgt cccaggagcc 360
gtactctgac agctgtgcac gatgccatcc ttgaggactt ggtcttccca agcgaaattg 420
tgggcaagag aantccgcgt caaactagat ggc 453

<210> 619
<211> 541

<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 85, 191, 254, 285, 428, 450, 454, 476
<223> n = A,T,C or G

<400> 619
ggccgccctt tttttttttt ttttctgaaa acaagtttta tttaaataag ggtttaaata 60
cattacacat aacattaaaa ctganggga aaaaaaacca aaaaccagtt tgttacttca 120
catggcattg ggcagctgct gctattaagt tgcaagctct acagctagct acatgactga 180
tggatcagtt ngagatttgt tcccttgtca aaagtttaac tctgatagaa ggttggcctc 240
acattctgat gttnggacat cccttagcta ggatatgtct ggtcnaacag acctttgtgg 300
caagccagat gtcctatcac ctcgctagcg gtaagagggc ctctttgagc tctgtccacc 360
tagtcaggtt ggagacacca ggggatctac caccaaaagc tcccttctag tagtacagct 420
ggtgcttntg ccttacccca tcctctcctn tcanattcac cgaggactgt tcaggnggta 480
acattctctt agggtaggga actctgcaga gggagagctg aggaggttcc ggccatagtt 540
g 541

<210> 620
<211> 243
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 59
<223> n = A,T,C or G

<400> 620
ggccgcgtcg acggcggcgg caggagaggt tgtggtgcta gtttctctaa gccatccant 60
gccatcctcg tcgctgcagc gacacacgct ctcgccgccg ccatgactga gcagatgacc 120
cttcgtggca ccctcaaggg ccacaacggc tgggtaaccc agatcgctac taccccgcag 180
ttcccggaca tgatcctctc cgcctctcga gataagacca tcatcatgtg gaaactgacc 240
agg 243

<210> 621
<211> 259
<212> DNA
<213> Homo sapiens

<400> 621
ggctccccag caggcagaag tatgcaaagc atgcatctca attagtcagc aaccatagtc 60
ccgcccctaa ctccgcccat cccgccccta actccgccca gttccgccca ttctccgccc 120
catggctgac taattttttt tatttatgca gaggccgagg ccgcctctgc ctctgagcta 180
ttccagaagt agtgaggagg cttttttgga ggcctaggct tttgcaaaaa gctcccggga 240
gcttgtatat ccattttcg 259

<210> 622
<211> 467
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 405
<223> n = A,T,C or G

<400> 622
ggccgcgtcg actggtgcta gtttctctaa gccatccagt gccatcctcg tcgctgcagc 60
gacacacgct ctcgccgccg ccatgactga gcagatgacc cttcgtggca ccctcaaggg 120

ccacaacggc tgggtaaccc agatcgctac taccccgcag ttcccggaca tgatcctctc 180
cgcctctcga gataagacca tcatcatgtg gaaactgacc agggatgaga ccaactatgg 240
aattccacag cgtgctctgc ggggtcactc ccactttgtt agtgatgtgg ttatctcctc 300
agatggccag tttgccctct caggctcctg ggatggaacc ctgcgcctct gggatctcac 360
aacgggcacc accacgaggc gatttgtggg ccataccaag gatgngctga gtgtggcctt 420
ctcctctgac aaccggcaga ttgtctctgg atctcgagat aaaacca 467

<210> 623
<211> 138
<212> DNA
<213> Homo sapiens

<400> 623
ggccgccctt tttttttttt ttttatttta gtaactcata gtgtatttat agaatgaaaa 60
gttctctatc aaaatacact tttcactggg aaaaataaat aaaatagaca aatggatcta 120
cacaaagtaa acattaac 138

<210> 624
<211> 153
<212> DNA
<213> Homo sapiens

<400> 624
gatcctcaca caaagaggca actgaaagga tgaaatcact gacttggatc ttgggccttt 60
gggctcttgc agcgtgtttc acacctggtg agagtcaaag aggccccagg ggaccatatc 120
cacctggacc gctggctcct cctcaacctt ttg 153

<210> 625
<211> 469
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 442
<223> n = A,T,C or G

<400> 625
ggccgcgtcg actttttttt tttaagtttt taaacttttt atttgcatat taaaaaaatt 60
gtgcattcca ataattaaaa tcatttgaac aaaaaaaaaa tggcactctg attaaactgc 120
attacagcct gcaggacacc ttgggccagc ttggttttac tctagatttc actgtcgtcc 180
cacccccactt cttccacccc acttcttcct tcaccaacat gcaagttctt tccttccctg 240
ccagccagat agatagacag atgggaaagg caggcgcggc cttcgttgtc agtagttctt 300
tgatgtgaaa ggggcagcac agtcatttaa acttgatcca acctctttgc atcttacaaa 360
gttaaacagc taaaagaagt aaaataagaa ggcaatgctt gtggaatgta cagtgcatat 420
tggcggcgca cgcctcatta cnattcgcct gcttgcttct cctgttcaa 469

<210> 626
<211> 551
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 182, 241, 265, 301, 325, 414, 425, 467, 508, 510, 516, 518,
539
<223> n = A,T,C or G

<400> 626
ggccgccctt tttttttttt tttttaaata aaacttatgt tttgttgttt tatgacttga 60
acaagttttg atattttaaa agcgctcagc gtttaatctg gttgtttggg ggaaaagaaa 120
agaaacaaag aaaggaaaaa aacaacaaaa aaacctcacc aaacaaccta acattttatt 180

anaaaaacaa agaacatgat ttttttttta attaaaaaa atgttgttgc tgtttcatta 240
naattgaaaa cgggtttttt ctttntttct gagttagcat tttggagtct ttagtttgaa 300
natgcttttg ccctaccatg tctgngaatg tctacattag tctactttgt tagtaaaatt 360
tataaaaata ggagtgcagc agctctttat aataaatgtc gcattcagtg tctnatactg 420
gctgngcctt aagtaccaaa tttataaacg taacaattta aaaaatntta ataaaacgtc 480
aatatcacat tttaaaaaag aaaaaatntn tatccncnct acaatatgtt ttaatgccnt 540
ctattgagtt g 551

<210> 627
<211> 434
<212> DNA
<213> Homo sapiens

<400> 627
ggccgcgtcg actctcgggc tcggaacgag actgcacgga ttgttttaag aaaatggcag 60
acaaaccaga catgggggaa atcgccagct tcgataaggc caagctgaag aaaacggaga 120
cgcaggagaa gaacaccctg ccgaccaaag agaccattga gcaggagaag cggagtgaaa 180
tttcctaaga tcctggagga tttcctaccc ccgtcctctt cgagacccca gtcgtgatgt 240
ggaggaagag ccacctgcaa gatggacacg agccacaagc tgcactgtga acctgggcac 300
tccgcgccga tgccaccggc ctgtgggtct ctgaagggac cccccccaa tcggactgcc 360
aaattctccg gtttgccccg ggatattata gaaaattatt tgtatgaata atgaaaataa 420
aacacacctc gtgg 434

<210> 628
<211> 524
<212> DNA
<213> Homo sapiens

<400> 628
ggccgcgtcg acgaacgcgg gtccacgcgt gtgatcgtcc gtgcgtctag cctttgccca 60
cgcagctttc agtcatggcc tccggtaacg cgcgcatcgg aaagccagcc cctgacttca 120
aggccacagc ggtggttgat ggcgccttca aagaggtgaa gctgtcggac tacaaaggga 180
agtacgtggt cctctttttc taccctctgg acttcacttt tgtgtgcccc accgagatca 240
tcgcgttcag caaccgtgca gaggacttcc gcaagctggg ctgtgaagtg ctgggcgtct 300
cggtggactc tcagttcacc cacctggctt ggatcaacac cccccggaaa gagggaggct 360
tgggcccccct gaacatcccc ctgcttgctg acgtgaccag acgcttgtct gaggattacg 420
gcgtgctgaa aacagatgag ggcattgcct acaggggcct ctttatcatc gatggcaagg 480
gtgtccttcg ccagatcact gttaatgatt tgcctgtggg acgc 524

<210> 629
<211> 564
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 266
<223> n = A,T,C or G

<400> 629
ggccgccctt tttttttttt ttttatcaaa tgaatacttt attagagaca taacacgtat 60
aaaataaatt tcttttcatc atggagttac cagattttaa aatcaaccaa cactttctca 120
tttttacagc taagacatgt taaattctta aatgccataa tttttgttca actgctttgt 180
cattcaactc acaagtctag aatgtgatta agctacaaat ctaagtattc acagatgtgt 240
cttaggcttg gtttgtaaca atctanaagc aatctgttta caaaagtgcc accaaagcat 300
tttaaagaaa ccaatttaat gccaccaaac ataagcctgc tatacctggg aaacaaaaaa 360
tctcacacct aaattctagc agagtaaacg attccaacta gaatgtactg tatatccata 420
tggcacattt atgactttgt aatatgtaat tcataataca ggtttaggtg tgtggtatgg 480
agctaggaaa accaaagtag taggatatta tagaaaagat ctgatgttaa gtataaagtc 540
atatgcctga tttcctcaaa cctt 564

<210> 630

<211> 56
<212> DNA
<213> Homo sapiens

<400> 630
ggccgcgtcg accacaaggt tgcagccgga gccgcccagc tcaccgagag cctagt 56

<210> 631
<211> 323
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 288, 319
<223> n = A,T,C or G

<400> 631
ggccgcgtcg acggtaaatt gcctgtttta agttttactt aatgttgggt tttggtagat 60
gaggaaagca ttttggttat ttgttttgtt ttaaatacca aatttcttat atttttctg 120
gaatattaat actattacca agctattatt tcatggaatt tgggtttctt ttttttgtt 180
tttttaaaat taagtgctgt ttgttttctt ggttattgaa cataatccaa agtagagatg 240
ttattactca attcaagaaa agaaagggct aataaaactt aacttcangt caaaaaaaa 300
aaaaaaaaaa aaaaaaaang ggc 323

<210> 632
<211> 139
<212> DNA
<213> Homo sapiens

<400> 632
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaaccattc 60
gtagacgacc tgcttctggg tcggggtttc gtacgtagca gagcagctcc ctcgctgcga 120
tctattgaaa ggtcgacgc 139

<210> 633
<211> 429
<212> DNA
<213> Homo sapiens

<400> 633
ggccgcgtcg accgggctcg gaacgagact gcacggattg ttttaagaaa atggcagaca 60
aaccagacat gggggaaatc gccagcttcg ataaggccaa gctgaagaaa acggagacgc 120
aggagaagaa caccctgccg accaaagaga ccattgagca ggagaagcgg agtgaaattt 180
cctaagatcc tggaggattt cctacccccg tcctcttcga gaccccagtc gtgatgtgga 240
ggaagagcca cctgcaagat ggacacgagc cacaagctgc actgtgaacc tgggcactcc 300
gcgccgatgc caccggcctg tgggtctctg aagggacccc cccccaatcg gactgccaaa 360
ttctccggtt tgccccggga tattatagaa aattatttgt atgaataatg aaaataaaac 420
acacctcgt 429

<210> 634
<211> 590
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 535, 539, 561
<223> n = A,T,C or G

<400> 634
ggccgccctt tttttttttt tttaaggtga caatcacatc aattttattt tataacaaat 60

agaatcatgt cccagttcca aaacaaaata aatagtaatg ttaatataga gatttactca 120
tggccttttt tgttaaagag tcttaaaatg tttctttgga caatttaaaa attttcaatg 180
tttttttac tcccatacaa cctagccccc ctgccaaata aaaatcaagc atattttctc 240
ctgtatcttg tgtataggtt atataatagt accttttatc tttaagatat gagctgaaac 300
cccacctatg gttgtagtga gcatcctact ttacgcctct tatctccttt aaattcaaaa 360
caggtatctc aaaaataaag ttaatatagg tttataagta ggacttgctc actcctgaaa 420
gtacgtttaa gtaaatctcc aaacacattt caaatactct cagagagtct gttttatact 480
accaagtatc ttatccacat ttcttcaaaa taaacaaaaa aatgctcaca aaatntctnt 540
gagaaacaag aagataaaat ntaaaatctt aatttttaca tataaaataa 590

<210> 635
<211> 510
<212> DNA
<213> Homo sapiens

<400> 635
ggccgcgtcg accaaaacac caaatggcgg atgacgccgg tgcagcgggg gggcccgggg 60
gccctggtgg ccctgggatg gggaaccgcg gtggcttccg cggaggtttc ggcagtggca 120
tccgggggccg gggtcgcggc cgtggacggg gccggggccg aggccgcgga gctcgcggag 180
gcaaggccga ggataaggag tggatgcccg tcaccaagtt gggccgcttg gtcaaggaca 240
tgaagatcaa gtccctggag gagatctatc tcttctccct gcccattaag gaatcagaga 300
tcattgattt cttcctgggg gcctctctca aggatgaggt tttgaagatt atgccagtgc 360
agaagcagac ccgtgccggc cagcgcacca ggttcaaggc atttgttgct atcggggact 420
acaatggcca cgtcggtctg ggtgttaagt gctccaagga ggtggccacc gccatccgtg 480
gggccatcat cctggccaag ctctccatcg 510

<210> 636
<211> 561
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 527, 557
<223> n = A,T,C or G

<400> 636
ggccgcgtcg acgcagcgct gcctccgaga ccgcgaggtg ggtggagcgg gtcttcctgg 60
aagggtgcga taaggccggg cgaggtgcct gggatgcttc tccccttccg cgaggaagag 120
atctaattgg gtagggcggg tgtagactag cctgccgagc cgcccgctgg cacctgcagc 180
ctcctgggcg cccgccgggc cccggcgaga aagttgttaa agggagcgag gtggttgttc 240
ctggggtccg aggcgcgcct ctcacgccct gcccaacaga agccgcagtc ccgtggggtc 300
tggagacgca gtttcctgtt aatgacaata aatccctgct ccccctgcct cagacatcta 360
cgcagcgaaa tcgagcctgg ccttgagggt ccacaccgcg agggaagatg cgtgcgccca 420
ttccagagcc taagcctgga gacctgattg agatttttcg ccctttctac agacactggg 480
ccatctatgt tggcgatgga tatgtggttc atctggcccc tccaagngag gtcgcaggag 540
ctggtgcagc cagtgtnatg t 561

<210> 637
<211> 64
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 56
<223> n = A,T,C or G

<400> 637
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttaaa aagaanaaag 60
cctt 64

<210> 638
<211> 505
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 62, 73, 78, 85, 114, 122, 259, 262, 272, 308, 341, 351, 434, 468
<223> n = A,T,C or G

<400> 638
ggccgccctt tttttttttt ttttgaaatt caagtaactt tatttaaatt caaaaacaat 60
tnttaaaact gcntttanag tcaanaccct tttgtattat aaaaatcaca agtntttcta 120
anagacaaaa atacttctag gttaactaga ccagatctga ctttggactt tattctttaa 180
acaaattgca gagaatagag aaaaaaatag gttatttaca gaaaacaata tctacatatg 240
tacttagagg tacaaattng gngacagaaa anacttcagt atatgctggc atcttaaaag 300
cagttctnaa agagcttagt tttattttct tgaattttaa naatgcctaa natccttctt 360
catcctcgat cttgggagcc aagtagtatt ttaagtgtcc catatccgca attttatact 420
ctacaacaag gggnacatct gcagacatac tgagtgtcac cgttgaanag agtggagtgg 480
cttttgtaaa gaagttcagg tccct 505

<210> 639
<211> 227
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 211, 212, 213
<223> n = A,T,C or G

<400> 639
ggccgcgtcg acgcggtagc tgggaccgcc gttcagtcgc caatatgcag ctctttgtcc 60
gcgcccagga gctacacacc ttcgaggtga ccggccagga aacggtcgcc cagatcaagg 120
ctcatgtagc ctcactggag ggcattgccc cggaagatca agtcgtgctc ctggcaggcg 180
cgcccctgga ggatgaggcc actctgggcc nnngcggggt ggaggcc 227

<210> 640
<211> 446
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 40, 143, 147, 161, 192, 223, 243, 258, 320, 326, 332, 337, 341, 371, 384, 415, 440
<223> n = A,T,C or G

<400> 640
ggccgccctt tttttttttt tttttttttt tttttttttn gccacgaggt gtgttttatt 60
ttcattattc atacaaataa ttttctataa tatcccgggg caaaccggaa aatttggcag 120
tccgattggg gggggggtccc ttnaaanacc cacaggccgg nggcatcggc gcggagtgcc 180
caggttcaca gngcagcttg gggctcgtgt ccatcttgca ggnggctctt cctccacatc 240
acnactgggg tctcaaanag gacgggggta ggaaatcctc caggatctta ggaaatttca 300
ctccgcttct cctgctcaan ggtctntttg gncggcnggg ngttcttctc ctgcgtctcc 360
gttttcttca ncttggcctt atcnaagctg gcgatttccc ccatgtctgg tttgnctgcc 420
attttcttaa aacaatccgn gcagtc 446

<210> 641
<211> 560
<212> DNA

<213> Homo sapiens

<220>
<221> misc_feature
<222> 527
<223> n = A,T,C or G

<400> 641
ggccgcgtcg acccgcgctg gagtatccag ataggcgaca cgccggcggg cggctgaggc 60
gggaatggct gctgtactgc agcgcgtcga gcggctgtcc aatcgagtcg tgcgtgtgtt 120
gggctgtaac ccgggtccca tgaccctcca aggcaccaac acctacctag tggggaccgg 180
ccccaggaga atcctcattg acactggaga accagcaatt ccagaataca tcagctgttt 240
aaagcaggct ctaactgaat ttaacacagc aatccaggaa attgtagtga ctcactggca 300
ccgagatcat tctggaggca taggagatat ttgtaaaagc atcaataatg acactaccta 360
ttgcattaaa aaactcccac ggaatcctca gagagaagaa attataggaa atggagagca 420
acaatatgtt tatctgaaag atggagatgt gattaagact gagggagcca ctctaagagt 480
tctatatacc cctggccaca ctgatgatca catggctcta ctcttanaag aggaaaatgc 540
tatcttttct ggagattgca 560

<210> 642
<211> 517
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 37, 68, 161, 327, 467
<223> n = A,T,C or G

<400> 642
ggccgccctt tttttttttt tttcacatct gcatcanatt tattttttaa aggaatggat 60
tttgaganaa aacaacgtgg gcagaagtat ggaatagaaa ataaatacaa atgtaggcta 120
ttctgctaat tgttttataa ccacgacaaa ctagtacaga naatgccctg tacaaaacac 180
aacaaaggtt caaacatcga gatgttccct tagcaaggct gaaaatttca gtctctggta 240
tttggaattt aggctgcagt ccttgttttt ggatggatca ctgggtgtgt ggcacagtcc 300
atgcttttaa ccagatttga acagaanaat ggccacttgg cccaggtaga agtagatgaa 360
gtgtttggtt tcatgtgtca cataactacc gaagttcctc cccacgatgc aatgccaggt 420
gggattgtac ttcttgtcaa attccttctt gatatgagcc gcaatgncct tctctatgtt 480
gtatttctcc agcgcctgag tagcgcactc caccgag 517

<210> 643
<211> 530
<212> DNA
<213> Homo sapiens

<400> 643
ggccgcgtcg acaaatcaat agatccagaa gaagtagaat cgcgtgaata aaagatttta 60
ttcagtttcc agaaagaggg gggaatgaaa gaccccacca taaggcttag caagctagct 120
gcagtaacgc cattttgcaa ggcatgaaaa agtaccagag ctgagttctc aaaagtcaca 180
aggaagttta gttaaagaat aaggctgaac aaaactggga caggggccaa acaggatatc 240
tgtggtcgag cacctgggcc ccggctcagg gccaagaaca gatggtactc agataaagcg 300
aaactagcaa cagtttctgg aaagtcccac ctcagtttca agttccccaa aagaccggga 360
aaaaccccaa gccttattta aactaaccaa tcagctcgct tctcgcttct gtaaccgcgc 420
tttttgctcc ccagccctat aaaaagggta aaaaccccac actcggtgcg ccagtcatcc 480
gatagactga gtcgcccggg tacccgtgtt cccaataaag ccttttgctg 530

<210> 644
<211> 447
<212> DNA
<213> Homo sapiens

<400> 644

ggccgcgtcg acgcggcagc catcaggtaa gccaagatgg gtgcatacaa gtacatccag 60
gagctatgga gaaagaagca gtctgatgtc atgcgctttc ttctgagggt ccgctgctgg 120
cagtaccgcc agctctctgc tctccacagg gctccccgcc ccacccggcc tgataaagcg 180
cgccgactgg gctacaaggc caagcaaggt tacgttatat ataggattcg tgttcgccgt 240
ggtggccgaa aacgcccagt tcctaagggt gcaacttacg gcaagcctgt ccatcatggt 300
gttaaccagc taaagtttgc tcgaagcctt cagtccgttg cagaggagcg agctggacgc 360
cactgtgggg ctctgagagt cctgaattct tactgggttg gtgaagattc cacatacaaa 420
tttttgagg gtatcctcat tgatcca 447

<210> 645
<211> 457
<212> DNA
<213> Homo sapiens

<400> 645
ggccgcgtcg accagaattt cggtggtgca ggccctggtt ctgacccaac agtatcacca 60
actcaaatca atagatccag aaaaagtaga atcgcgtaaa taaaagattt tattcagttt 120
ccagaaagag gggggaatga aagaccccac cataaggctt agcaagctag ctgcagtaac 180
gccattttgc aaggcatgaa aaagtaccag agctgagttc tcaaaagtca caaggaagtt 240
tagttaaaga ataaggctga acaaaactgg gacaggggcc aaacaggata tctgtggtcg 300
agcacctggg ccccggctca gggccaagaa cagatggtac tcagataaag cgaaactagc 360
aacagtttct ggaaagtccc acctcagttt caagttcccc aaaagaccgg gaaaaacccc 420
aagccttatt taaactaacc aatcagctcg cttctcg 457

<210> 646
<211> 563
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 556, 563
<223> n = A,T,C or G

<400> 646
ggccgcgtcg acctgacgcg ggtaaaaagg ccagctggga tgccccccaaa gtttggggac 60
taagactcta ccgatccacg gggccgacc cggtgacccg gttctctttg acccgccagg 120
tcctcaatgt aggaccccgc gtccccattg ggcctaatcc cgtgatcact gaacagctac 180
ccccctccca acccgtgcag atcatgctcc ccaggcctcc tcatcctcct ccttcaggcg 240
cggcctctat ggtgcctggg gctcccccgc cttctcaaca acctgggacg ggggacaggc 300
tgctaaacct agtaaaagga gcctatcaag cactcaacct caccagtccc gacagaaccc 360
aagagtgctg gctgtgtctg gtatcgggac ccccctacta cgaaggggtt gccgtcctag 420
gtacctactc caaccatacc tctgccccag ctaactgctc cgtggcctcc caacacaagc 480
tgaccctgtc cgaagtgacc gggcagggac tctgcgtagg agcagttccc aaaacccatc 540
aggccctgtg taatancacc can 563

<210> 647
<211> 139
<212> DNA
<213> Homo sapiens

<400> 647
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaaccattc 60
gtagacgacc tgcttctggg tcggggtttc gtacgtagca gagcagctcc ctcgctgcga 120
tctattgaaa ggtcgacgc 139

<210> 648
<211> 541
<212> DNA
<213> Homo sapiens

<400> 648

ggccgcgtcg acgcggcagc catcaggtaa gccaagatgg gtgcatacaa gtacatccag 60
gagctatgga gaaagaagca gtctgatgtc atgcgctttc ttctgagggt ccgctgctgg 120
cagtaccgcc agctctctgc tctccacagg gctccccgcc ccacccggcc tgataaagcg 180
cgccgactgg gctacaaggc caagcaaggt tacgttatat ataggattcg tgttcgccgt 240
ggtggccgaa aacgcccagt tcctaagggt gcaacttacg gcaagcctgt ccatcatggt 300
gttaaccagc taaagtttgc tcgaagcctt cagtccgttg cagaggagcg agctggacgc 360
cactgtgggg ctctgagagt cctgaattct tactgggttg gtgaagattc cacatacaaa 420
tttttgagg ttatcctcat tgatccattc cataaagcta tcagaagaaa tcctgacacc 480
cagtggatca ccaaaccagt ccacaagcac agggagatgc gtgggctgac atctgcaggc 540
c 541

<210> 649
<211> 582
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 521
<223> n = A,T,C or G

<400> 649
ggccgcgtcg acgtgccggt ggagtcgtgt tggtcctcag aatccccgcg tagccgctgc 60
ctcctcctac cctcgccatg tttcttaccc ggtctgagta cgacaggggc gtgaatactt 120
tttctcccga aggaagatta tttcaagtgg aatatgccat tgaggctatc aagcttggtt 180
ctacagccat tgggatccag acatcagagg gtgtgtgcct agctgtggag aagagaatta 240
cttccccact gatggagccc agcagcattg agaaaattgt agagattgat gctcacatag 300
gttgtgccat gagtgggcta attgctgatg ctaagacttt aattgataaa gccagagtgg 360
agacacagaa ccactggttc acctacaatg agacaatgac agtggagagt gtgacccaag 420
ctgtgtccaa tctggctttg cagtttggag aagaagatgc agatccaggt gccatgtctc 480
gtccctttgg agtagcatta ttatttggag gagttgatga naaaggaccc cagctgtttc 540
atatggaccc atctgggacc tttgtacagt gtgatgctcg ag 582

<210> 650
<211> 493
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 470
<223> n = A,T,C or G

<400> 650
ggccgccctt tttttttttt tttagtagag acagggtttc accatgttgg tcaggctggt 60
tcccaactcc tgacctcaag tgatccacct gccttggcct cccaaagtgc tggaactaca 120
ggcatgagcc accacgcctg gcttttatta acgtttttct gtttttcttg agacagggtc 180
ctcactctgt cactcaggct agagagcaat ggcatgatcg atcatagctc actgcagcct 240
ctaactccta ggctcaagag atcctcctac cttagcctcc tgagtagctg ggacaacaga 300
tgcatgccac catgcctatc taatttttc tttttacccc caacctccgc tagagacggg 360
gtcccgctat gttgcctagg ctggtcttta attcctgggc tcaagcgatt ctgtcacctc 420
ggccacccaa agtgctgaga ttacaggaaa gagcctccat gcccagcctn taataaatgg 480
ttcttaaatg gag 493

<210> 651
<211> 295
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 87, 162, 178, 244, 270, 287, 289

<223> n = A,T,C or G

<400> 651
ggccgccctt tttttttttt tttgagacag agtcttgctc tgttgcccag cctggagtgc 60
agtggcgcaa tgtcagctca ctgcaanctc cgcctcctgg gttcacacca ttctcctgcc 120
tcaggagaaa aaaaaaaaag taactgctga gacatcaatg anctacagga agtcagangc 180
aggaggtgtg gggctgcata cttattctct tgcccagcct tctactgtac ccactgttat 240
caanatttcc aaaagtagag gaaggagcan ccctggggtg agagcanang agctc 295

<210> 652
<211> 460
<212> DNA
<213> Homo sapiens

<400> 652
ggccgcgtcg accgccgccg agtcgcgcgg aggcggaggc ttgggtgcgt tcaagattca 60
acttcacccg taacccaccg ccatggccga ggaaggcatt gctgctggag gtgtaatgga 120
cgttaatact gctttacaag aggttctgaa gactgccctc atccacgatg gcctagcacg 180
tggaattcgc gaagctgcca aagccttaga caagcgccaa gcccatcttt gtgtgcttgc 240
atccaactgt gatgagccta tgtatgtcaa gttggtggag gccctttgtg ctgaacacca 300
aatcaaccta attaaggttg atgacaacaa gaaactagga gaatgggtag gcctttgtaa 360
aattgacaga gaggggaaac cccgtaaagt ggttggttgc agttgtgtag tagttaagga 420
ctatggcaag gagtctcagg ccaaggatgt cattgaagag 460

<210> 653
<211> 318
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 297, 299, 311
<223> n = A,T,C or G

<400> 653
ggccgcgtcg acctgggccc cggctcaggg ccaagaacag atggtactca gataaagcga 60
aactagcaac agtttctgga aagtcccacc tcagtttcaa gttccccaaa agaccgggaa 120
aaaccccaag ccttatttaa actaaccaat cagctcgctt ctcgcttctg taaccgcgct 180
ttttgctccc cagccctata aaaagggtaa aaaccccaca ctcggtgcgc cagtcatccg 240
atagactgag tcgcccgggt acccgtgttc ccaataaagc cttttgctgt ttgcatncna 300
aaaaaaaaaa naaagggc 318

<210> 654
<211> 632
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 548
<223> n = A,T,C or G

<400> 654
ggccgcgtcg acagaatcag gaaatgaaag atagtatgga ctgaaggtaa caatatttta 60
atgttatgca atatagtcag agaaatatta aaaattagtt gtttgctgtg cataggtgga 120
tctcgcagga agctaatgaa acctaagctt cagtgcctct cacttagaca tgttccattc 180
gaggtcctga acctaacttt gtattaggaa ttctgtacta attttgttga agaagaccag 240
caaagttgtg tacacttcta cccccacaaa atctgcattg tccatgtgag taaagtaaaa 300
taattcctgt tattttttc tgttagaaat aagtatggag gatatgtttt taaaatttta 360
tgagttaatt gaaatatcca tatataacaa gtgactttct cacaatatat atgatgtgat 420
atatagggag atagtttcac tttcatcata ttttatacgt tgattctgaa ctatagaaaa 480
ataataaatg ggattttaat tatagctctt agttgggaaa gaaatataga gagatgtggg 540

atttgaantg cccatgaaag acattttatt ttacttgaat atattcttgc ttcactttac 600
cctccataat atgttgtaca ttagtgctga tc 632

<210> 655
<211> 511
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 479, 506
<223> n = A,T,C or G

<400> 655
ggccgcgtcg accccggttc tctttgaccc gccaggtcct caatgtagga ccccgcgtcc 60
ccattgggcc taatcccgtg atcactgaac agctaccccc ctcccaaccc gtgcagatca 120
tgctccccag gcctcctcat cctcctcctt caggcgcggc ctctatggtg cctggggctc 180
ccccgccttc tcaacaacct gggacggggg acaggctgct aaacctagta aaaggagcct 240
atcaagcact caacctcacc agtcccgaca gaacccaaga gtgctggctg tgtctggtat 300
cgggaccccc ctactacgaa ggggttgccg tcctaggtac ctactccaac catacctctg 360
ccccagctaa ctgctccgtg gcctcccaac acaagctgac cctgtccgaa gtgaccgggc 420
agggactctg cgtaggagca gttcccaaaa cccatcaggc cctgtgtaat accacccana 480
aggcgagcga cgggtcctac tatctngctg c 511

<210> 656
<211> 233
<212> DNA
<213> Homo sapiens

<400> 656
ggccgcgtcg acggcggcag ccatcaggta agccaagatg ggtgcataca agtacatcca 60
gaagctatgg agaaagaagc agtctgatgt catgcgcttt cttctgaggg tccgctgctg 120
gcagtaccgc cagctctctg ctctccacag ggctccccgc cccacccggc ctgataaagc 180
gcgccgactg ggctacaagg ccaagcaagg ttacgttata tataggattc gtg 233

<210> 657
<211> 505
<212> DNA
<213> Homo sapiens

<400> 657
ggccgcgtcg acggagccgc agggccgtag gcagccatgg cgcccagccg gaatggcatg 60
gtcttgaagc cccacttcca caaggactgg cagcggcgcg tggccacgtg gttcaaccag 120
ccggccccgta agatccgcag acgtaaggcc cggcaagcca aggcgcgccg catcgccccg 180
cgcccccgcgt cgggtcccat ccggcccatc gtgcgctgcc ccacggttcg gtaccacacg 240
aaggtgcgcg ccggccgcgg cttcagcctg gaggagctca gggtggccgg cattcacaag 300
aaggtggccc ggaccatcgg catttctgtg gatccgagga ggcggaacaa gtccacggag 360
tccctgcagg ccaacgtgca gcggctgaag gagtaccgct ccaaactcat cctcttcccc 420
aggaagccct cggcccccaa gaagggagac agttctgctg aagaactgaa actggccacc 480
cagctgaccg gaccggtcat gcccg 505

<210> 658
<211> 139
<212> DNA
<213> Homo sapiens

<400> 658
ggccgcgtcg acctttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgagggggc 139

<210> 659

<211> 443
<212> DNA
<213> Homo sapiens

<400> 659
ggccgcgtcg acgagcacca ggatctcggg ctcggaacga gactgcacgg attgttttaa 60
gaaaatggca gacaaaccag acatgggga aatcgccagc ttcgataagg ccaagctgaa 120
gaaaacggag acgcaggaga agaacaccct gccgaccaaa gagaccattg agcaggagaa 180
gcggagtgaa atttcctaag atcctggagg atttcctacc cccgtcctct tcgagacccc 240
agtcgtgatg tggaggaaga gccacctgca agatggacac gagccacaag ctgcactgtg 300
aacctgggca ctccgcgccg atgccaccgg cctgtgggtc tctgaaggga cccccccca 360
atcggactgc caaattctcc ggtttgcccc gggatattat agaaaattat ttgtatgaat 420
aatgaaaata aaacacacct cgt 443

<210> 660
<211> 507
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 23, 88, 103, 169, 176, 218, 250, 294, 365, 368, 395, 425,
451, 454, 455, 456
<223> n = A,T,C or G

<400> 660
ggccgccctt tttttttttt ttngctatct ttatttcttt atttgcactg ggaaataaca 60
tctttgtcta ctatttctag catctganat ccaggtcagt tgngattaat ttttctctgt 120
attatgcaat gtattttcct gcttttcatg cctctctact ggatgctana cattgnacat 180
tttaccttct tgggcactga atatttttgt agtcccanag gtacttttga gctttgtcct 240
aggatgcagn gtgatccttt caggtcctgc tgtatagctg tgtcaggtgg cagngcccat 300
ctagggtttc tcacttgtgt tttctaccca gtgccccata aatcatgagg ttttccagct 360
agggnggngg gaacaggccc taccctaggt cctgngtcag caccactgtt ccttctaatc 420
ttctnacatg gctctttctc tggcctgagg nggnnncctt acacacatgc gctgatcagt 480
agggctgggc tgcctaattg agggagc 507

<210> 661
<211> 556
<212> DNA
<213> Homo sapiens

<400> 661
ggccgcgtcg accgtggagc cacggcgtgg gagtaggggg ctgaaggcag gcagcagcgg 60
ccagggccgc cctctgctag ccgcttgggt ctcgggatac cccgtttctt cctgtaggtg 120
tgggacgtgc gtgcggcgag atggacactc ccccgctctc ggattcggag tcggaatccg 180
atgaatccct tgtcacagac agagagttgc aggatgcgtt ttcccgaggg cttctgaagc 240
caggcctcaa tgtcgtgcta gaggggccga agaaggccgt gaacgacgtg aatggcctga 300
agcaatgttt ggcagaattc aagcgggatc tggaatgggt tgaaaggctc gatgtgacac 360
tgggtccggt accggagatc ggtggatctg aggcgccagc acctcagaac aaggaccaga 420
aagctgttga tccagaagac gacttccagc gagagatgag tttctatcgc caagcccagg 480
ccgcagtgct tgcagtctta ccccgcctcc atcagctcaa agtccctacg aagcgaccca 540
ctgattattt tgcgga 556

<210> 662
<211> 139
<212> DNA
<213> Homo sapiens

<400> 662
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaaccattc 60
gtagacgacc tgcttctggg tcggggtttc gtacgtagca gagcagctcc ctcgctgcga 120
tctattgaaa ggtcgacgc 139

<210> 663
<211> 486
<212> DNA
<213> Homo sapiens

<400> 663
ggccgcgtcg actaattttt aaatatttga tcattttcta ttgtccaatc atttcagcac 60
ctccaaaggt ccctaggaca ctttgcctct cttctccccc tgccccccac cctgctccca 120
catctggggg cccatgggcc aggagtggat aagcctgcat taatacaacc tttctccatt 180
cactttctat ttacaaatta ggaaagcaac cttttggttt atatatattt tttttaatac 240
ctcagtgctg caagtatcac cagagaggct atggaagaat tttttttaa tttattgtag 300
atgtaaacag aattttaaaa ataaaaagta taaacatcac tgcactgtga ctggtgggaa 360
aaactgacag tttcctcttt gcacatgttt aacatttggc tgttataata tatggtcctc 420
ggttggggaa agatacttat gatgaaggat attttttaat ttaacttttt tttaaatatt 480
ggtaat 486

<210> 664
<211> 414
<212> DNA
<213> Homo sapiens

<400> 664
ggccgcgtcg accgccattt ttttggaaac ctctgcgcca tgagagccaa gtggaggaag 60
aagcgaatgc gcaggctgaa gcgcaaaaga agaaagatga ggcagaggtc caagtaaacc 120
gctagcttgt tgcaccgtgg aggccacagg agcagaaaca tggaatgcca gacgctgggg 180
atgctggtac aagttgtggg actgcatgct actgtctaga gcttgtctca atggatctag 240
aacttcatcg ccctctgatc gccgatcacc tctgagaccc accttgctca taaacaaaat 300
gcccatgttg gtcctctgcc ctggacctgt gacattctgg actatttctg tgtttatttg 360
tggccgagtg taacaaccat ataataaatc acctcttccg ctgttttagc tgaa 414

<210> 665
<211> 460
<212> DNA
<213> Homo sapiens

<400> 665
ggccgcgtcg accgcagttt gttcgcagtt tactcgcaca ccagtttccc ccaccgcgct 60
ttggattagt gtgatctcag ctcaaggcaa aggtgggata tcatggcatc tatctgggtt 120
ggacaccgag gaacagtaag agattatcca gactttagcc catcagtgga tgctgaagct 180
attcagaaag caatcagagg aattggaact gatgagaaaa tgctcatcag cattctgact 240
gagaggtcaa atgcacagcg gcagctgatt gttaaggaat atcaagcagc atatggaaag 300
gagctgaaag atgacttgaa gggtgatctc tctggccact ttgagcatct catggtggcc 360
ctagtgactc caccagcagt ctttgatgca aagcagctaa agaaatccat gaagggcgcg 420
ggaacaaacg aagatgcctt gattgaaatc ttaactacca 460

<210> 666
<211> 583
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 44, 101, 108, 136, 203, 239, 246, 254, 302, 372, 390, 399,
438, 473, 513, 520, 524, 561, 567
<223> n = A,T,C or G

<400> 666
ggccgccctt tttttttttt tttttttttt ttttttagta tttnaaaatt tactatattt 60
tcacagacaa aatgtatatt agcaaacttt ccccaaataa nacactgnga caaatgtctg 120
gtatcgtttt aacagngatg atctccaaat taaatctcgg ttccctttat acttataatg 180
caggaactta ttccagctgt tgngaaaaac aaaaaatcta tgctcttatg acagttaana 240

tgcttntact tctnaagacc agctgctaca tatagctttc tgtttctcat accccctgtg 300
anaaatacta gaatatgacc caaaagaggg tacaataaca aaactacctg aacagataaa 360
atagatcagg cnttctagga ttcccaaccn caggaaatnt tacataatca ggaagcatga 420
agtcccatac atttaaanaa ttctatcccc aaatacatct ggtcccaaaa tgngattcaa 480
ttaagtctac aacagttaac aacatggaaa ttnttctacn aaanaaccgt aactctcaaa 540
gactagagtg ttagacctaa natgatncct ttaactttcc tga 583

<210> 667
<211> 507
<212> DNA
<213> Homo sapiens

<400> 667
ggccgcgtcg acctcatcga agatggcggc gcgatctgtg tcgggcatta ccagaagagt 60
cttcatgtgg acagtctcag ggacaccatg tagagaattt tggtctcgat tcagaaaaga 120
gaaagagcca gtggttgttg agacagtaga agagaaaaag gaacctatcc tagtgtgtcc 180
acctttacga agccgagcat acacaccacc tgaagatctc cagagtcgtt tggaatctta 240
cgttaaagaa gtttttggtt catctcttcc tagtaattgg caagacatct ccctggaaga 300
tagtcgtcta aagttcaatc ttctggctca tttagctgat gacttgggtc atgtagtccc 360
taactccaga ctccaccaga tgtgcagggt tagagatgtt cttgatttct ataatgtccc 420
tattcaagat agatctaaat ttgatgaact cagtgccagt aatctgcccc ccaatttgaa 480
aatcacttgg agttactaag caattcg 507

<210> 668
<211> 506
<212> DNA
<213> Homo sapiens

<400> 668
ggccgcgtcg actcttaatg aaatacagaa aaaccatctc agaaaaagga aaatgggcaa 60
tcgtcatagc cagtcgtaca ccctctcaga aggcagtcaa cagttgccta aaggggactc 120
ccaaccctcg acagtcgtgc agcctctcag ccacccatca cggaatggag agccagaggc 180
cccacagcct gctaaagcga gcagtcctca gggttttgat gtggatcgag atgccaaaaa 240
gctgaacaaa gcctgcaaag gaatggggac caatgaagca gccatcattg aaatcttatc 300
gggcaggaca tcagatgaga ggcaacaaat caagcaaaag tacaaggcaa cgtacggcaa 360
ggagctggag gaagtactca agagtgagct gagtggaaac ttcgagaaga cagcgttggc 420
ccttctggac cgtcccagcg agtacgccgc ccggcagctg cagaaggcta tgaagggtct 480
gggcacagat gagtccgtcc tcattg 506

<210> 669
<211> 56
<212> DNA
<213> Homo sapiens

<400> 669
ggccgcgtcg acgccaggtt ccccacgaac gtgcggtgcg tgacgggcga gggggc 56

<210> 670
<211> 595
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 567
<223> n = A,T,C or G

<400> 670
ggccgcgtcg acggaggttg gcggcgcggg gctgaaggct agcaaaccga gcgatcatgt 60
cgcacaaaca aatttactat tcggacaaat acgacgacga ggagtttgag tatcgacatg 120
tcatgctgcc caaggacata gccaagctgg tccctaaaac ccatctgatg tctgaatctg 180
aatggaggaa tcttggcgtt cagcagagtc agggatgggt ccattatatg atccatgaac 240

cagaacctca catcttgctg ttccggcgcc cactacccaa gaaaccaaag aaatgaagct 300
ggcaagctac ttttcagcct caagctttac acagctgtcc ttacttccta acatctttct 360
gataacatta ttatgttgcc ttcttgtttc tcactttgat atttaaaaga tgttcaatac 420
actgtttgaa tgtgctggta actgctttgc ttcttgagta gagccaccac caccatagcc 480
cagccagatg agtgctctgt ggacccacag cctaagctga gtgtgacccc agaagccacg 540
atgtgctctg tatccagaac acacttngca gatggaggaa gcatctgagt ttgag 595

<210> 671
<211> 518
<212> DNA
<213> Homo sapiens

<400> 671
ggccgcgggc ggcagccatc aggtaagcca agatgggtgc atacaagtac atccaggagc 60
tatggagaaa gaagcagtct gatgtcatgc gctttcttct gagggtccgc tgctggcagt 120
accgccagct ctctgctctc cacagggctc cccgccccac ccggcctgat aaagcgcgcc 180
gactgggcta caaggccaag caaggttacg ttatatatag gattcgtgtt cgccgtggtg 240
gccgaaaacg cccagttcct aagggtgcaa cttacggcaa gcctgtccat catggtgtta 300
accagctaaa gtttgctcga agccttcagt ccgttgcaga ggagcgagct ggacgccact 360
gtggggctct gagagtcctg aattcttact gggttggtga agattccaca tacaaatttt 420
tttgaggtta tcctcattga tccattccat aaagctatca gaagaaatcc tgacacccag 480
tggatcacca aaccagtcca caagcacagg gagatgcg 518

<210> 672
<211> 506
<212> DNA
<213> Homo sapiens

<400> 672
ggccgcgtcg acgttcattt cccagggtct tggaaaggat gcacactgat catctcaata 60
agacaggggc tgggttgggg gcagcagagg aggccaagca cattcacctg caccctagt 120
acctgggcag cccatactcc aatgtggtat gtcccctcct ggggctccca gctcaaaccc 180
tcccatgcct gcttccccca ggcctaactg aggaagtcct tcttgaagtg tgacctcggt 240
ccacttctct acagattgat ttaagagcct gggaagtcat tccacaaaca gacacacatg 300
cacacacgct tctcaccttc agagcttcaa gagcactgag gcgatcagtc ccctacccct 360
gttcccatcc agctttccac ttagctttga cctccatggc agcagtagca gtaacaatct 420
cagtaattgt tctttaaagc tgactcgttc ttcacctact tgcaaagtgc tttcttgtct 480
cataaaagtt agattccaag aaggac 506

<210> 673
<211> 453
<212> DNA
<213> Homo sapiens

<400> 673
ggccgcgtcg acggcggcag ccatcaggta agccaagatg ggtgcataca agtacatcca 60
ggagctatgg agaaagaagc agtctgatgt catgcgcttt cttctgaggg tccgctgctg 120
gcagtaccgc cagctctctg ctctccacag ggctccccgc cccacccggc ctgataaagc 180
gcgccgactg ggctacaagg ccaagcaagg ttacgttata tataggattc gtgttcgccg 240
tggtggccga aaacgcccag ttcctaaggg tgcaacttac ggcaagcctg tccatcatgg 300
tgttaaccag ctaaagtttg ctcgaagcct tcagtccgtt gcagaggagc gagctggacg 360
ccactgtggg gctctgagag tcctgaattc ttactgggtt ggtgaagatt ccacatacaa 420
atttttgag gttatcctca ttgatccatt cca 453

<210> 674
<211> 552
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 273, 543

<223> n = A,T,C or G

<400> 674
ggccgccctt tttttttttt tttagctttt ctggcttgtt taatgctgcg ggatcctcaa 60
tgatcataat tccatgagga tggcacatat gatcctttct actgggaaca tcactaatta 120
ttatcttgct actggcagaa taagaaaaat caggaaaatg actacatttg tgatcttctt 180
ctaactcttc ctttctaatt tctttgggat cttccatttt tatagccatt atgtcatcta 240
tttgcaatgc ctcaaaattt ctcaattcct tanaatctct taaattttcc ttagccgatt 300
tttcaaattc tgcttccttc tgtaacctag tttcatctgt tttctccatt ttaatttctt 360
tttcttcctt tcccttctct aattctttaa ttcttccacc atcggattct tttgctttta 420
ttagctttga ttcttccatt ttcatccctt ctgatgccag gcacatctct gccagttgaa 480
agagtgcaga ctttccacag cgttttacag gctcagcacc acccaactgc gaagtgtttg 540
aanaaatctc tg 552

<210> 675
<211> 385
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 150, 320
<223> n = A,T,C or G

<400> 675
ggccgcgtcg acgtgcccgc aggcacccgt gtgacatccg cacgtccagc tccgtgacct 60
gtgtgtgtgt gtgtgcacaa gtgagtgaga gatttcgaac gcccacccct cgactttgaa 120
atctgagcaa aacaagaaac tggggtcttn ctctcccccg aacctctccc cagctagtct 180
tccctctgtt cttcctgcct ccagccgccc gcgccagatt ttgaaatctc ggagacaaaa 240
ctagtactgt aagataaatt tttttgtact gtatttattg tgtataacga ttttttttaaa 300
ggagaattct gtacatttan aactcttgta aattaaaaac cgatcctttt tttaaaactg 360
taaaaaaaaa aaaaaaggtc gacgc 385

<210> 676
<211> 463
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 71, 95, 105, 158, 162, 184, 195, 247, 358, 385, 395
<223> n = A,T,C or G

<400> 676
ggccgccctt tttttttttt tttcggatgc aaacagcaaa aggctttatt gggaacacgg 60
gtacccgggc nactcagtct atcggatgac tggcncaccg agtgnggggt ttttaccctt 120
tttatagggc tggggagcaa aaagcgcggt tacagaancg anaagcgagc tgattggtta 180
gttnaaataa ggctngggggt ttttcccggt cttttgggga acttgaaact gaggtgggac 240
tttccanaac tgttgctagt ttcgctttat ctgagtacca tctgttcttg gccctgagcc 300
ggggcccagg tgctcgacca cagatatcct gtttggcccc tgtcccagtt ttgttcancc 360
ttattcttta actaaacttc tttgngactt ttganaactc agctctggta ctttttcatg 420
ccttgcaaaa tggcgttact gcagctagct tgctaagcct tat 463

<210> 677
<211> 56
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 53
<223> n = A,T,C or G

<400> 677
ggccgccctt ttttttttt ttttttttt ttttttttt ttttttttt ttnggg 56

<210> 678
<211> 586
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 558
<223> n = A,T,C or G

<400> 678
ggccgcgtcg accagaattt cggtggtgca ggccctggtt ctgacccaac agtatcacca 60
actcaaatca atagatccag aagaagtaga atcgcgtgaa taaaagattt tattcagttt 120
ccagaaagag gggggaatga aagaccccac cataaggctt agcaagctag ctgcagtaac 180
gccattttgc aaggcatgaa aaagtaccag agctgagttc tcaaaagtca caaggaagtt 240
tagttaaaga ataaggctga acaaaactgg gacaggggcc aaacaggata tctgtggtcg 300
agcacctggg ccccggctca gggccaagaa cagatggtac tcagataaag cgaaactagc 360
aacagtttct ggaaagtccc acctcagttt caagttcccc aaaagaccgg gaaaaacccc 420
aagccttatt taaactaacc aatcagctcg cttctcgctt ctgtaaccgc gctttttgct 480
ccccagccct ataaaaaggg taaaaacccc acactcggcg cgccagtcat ccgatagact 540
gagtcgcccg ggtacccngt gttcccaata aagccttttg ctgttt 586

<210> 679
<211> 592
<212> DNA
<213> Homo sapiens

<400> 679
ggccgcgtcg acccagggtc gccccggcaa ccacgagccc agccaatcag cgccccggac 60
tgcaccagag ccatggtcgg cagaagagca ctgatcgtac tggctcactc agagaggacg 120
tccttcaact atgccatgaa ggaggctgct gcagcggctt tgaagaagaa aggatgggag 180
gtggtggagt cggacctcta tgccatgaac ttcaatccca tcatttccag aaaggacatc 240
acaggtaaac tgaaggaccc tgcgaacttt cagtatcctg ccgagtctgt tctggcttat 300
aaagaaggcc atctgagccc agatattgtg gctgaacaaa agaagctgga agccgcagac 360
cttgtgatat tccagttccc cctgcagtgg tttggagtcc ctgccattct gaaaggctgg 420
tttgagcgag tgttcatagg agagtttgct tacacttacg ctgccatgta tgacaaagga 480
cccttccgga gtaagaaggc agtgctttcc atcaccactg gtggcagtgg ctccatgtac 540
tctctgcaag ggatccacgg ggacatgaat gtcattctct ggccaattca ga 592

<210> 680
<211> 426
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 24, 71, 95, 97, 155, 158, 160, 162, 184, 195, 247, 278, 288,
324, 335, 359, 396, 403
<223> n = A,T,C or G

<400> 680
ggccgccctt ttttttttt tttnggatgc aaacagcaaa aggctttatt gggaacacgg 60
gtacccgggc nactcagtct atcggatgac tggcncnccg agtgtggggt ttttaccctt 120
tttatagggc tggggagcaa aaagcgcggt tacanaancn anaagcgagc tgattggtta 180
gttnaaataa ggctnggggt ttttcccggt cttttgggga acttgaaact gaggtgggac 240
tttccanaaa ctgttgctag tttcgcttta tctgagtncc atctgttntt ggccctgagc 300
cggggcccag gtgctcgacc acanatatcc tgttnggccc ctgtcccagt tttgttcanc 360
cttattcttt aactaaactt ctttgggact tttganaact canctctggt actttttcat 420

gccttg 426

<210> 681
<211> 64
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 16
<223> n = A,T,C or G

<400> 681
tggtaccgag ctcggntcca ctagtccagt gtggtggact tctgcagata tccagcacag 60
tggc 64

<210> 682
<211> 488
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 304, 475
<223> n = A,T,C or G

<400> 682
ggccgccctt tttttttttt ttttgatgtt tgaaattcaa gtaactttat ttaaattcaa 60
aaacaattct taaaactgca tttagagtca agacccttttt gtattataaa aatcacaagt 120
atttctaaga gacaaaaata cttctaggtt aactagacca gatctgactt tggactttat 180
tctttaaaca aattgcagag aatagagaaa aaaataggtt atttacagaa aacaatatct 240
acatatgtac ttagaggtac aaatttggtg acagaaaaga cttcagtata tgctggcatc 300
ttanaagcag ttctcaaaga gcttagtttt attttcttga attttaagaa tgcctaagat 360
ccttcttcat cctcgatctt gggagccaag tagtatttta agtgtcccat atccgcaatt 420
ttatactcta caacaagggg tacatctgca gacatactga gtgtcaccgt tgaanagagt 480
ggagtggc 488

<210> 683
<211> 475
<212> DNA
<213> Homo sapiens

<400> 683
ggccgcgtcg acgggaagat ggcggacatt cagactgagc gtgcctacca aaagcagccg 60
accatctttc aaaacaagaa gagggtcctg ctgggagaaa ctggcaagga gaagctcccg 120
cggtactaca agaacatcgg tctgggcttc aagacaccca aggaggctat tgagggcacc 180
tacattgaca agaaatgccc cttcactggt aatgtgtcca ttcgagggcg gatcctctct 240
ggcgtggtga ccaagatgaa gatgcagagg accattgtca tccgccgaga ctatctgcac 300
tacatccgca agtacaaccg cttcgagaag cgccacaaga acatgtctgt acacctgtcc 360
ccctgcttca gggacgtcca gatcggtgac atcgtcacag tgggcgagtg ccggcctctg 420
agcaagacag tgcgcttcaa cgtgctcaag gtcaccaagg ctgccggcac caaga 475

<210> 684
<211> 473
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 438, 461, 473
<223> n = A,T,C or G

<400> 684
ggccgccctt tttttttttt tttattgtac accttgaagg cgaggttaat taaatcctgt 60
tgtggagttt gagggccgga atttaatttt tggagtttta tttaatatcg ggagcagatt 120
gggtaataaa atgtatattg agaataagac ggcctttttga cctttttaggg tctagggctg 180
taaagcgtct cagggttgct gccgaacgag ccatgaactg ggctgggttt ttatatttga 240
tgaaaaagag cctaaacgct tctgatttgg gataaagaaa aaggagcatt aaccttgact 300
atgtctttag ctccagccac ctttttaaga gtaaattgct gggcaggtgg gggagggcta 360
gtcacggaac gaaactgtaa gccggaccag gtgtgaggag gggaggtgat aaaaagatta 420
cagggtggag gagtgganccc tgaggaaaaa ttgggaccta ncttggcgtg gan 473

<210> 685
<211> 247
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 117, 127
<223> n = A,T,C or G

<400> 685
ggccgcgtcg actttttttt tttttttttc agtgttctca catcttttta atcattcata 60
ttgacttaat caggttgaca aaatctcagg gttggtctgg gatcattcac aaatcanaat 120
tactcanaga aattttcaca gcagttgcag cagcacaaac tctaacgctg atttaaatta 180
ataactgtta ttaatgaaca aacttgaaaa aggaatttca tatagaacat tacatttctc 240
cctgaca 247

<210> 686
<211> 139
<212> DNA
<213> Homo sapiens

<400> 686
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaaccattc 60
gtagacgacc tgcttctggg tcggggtttc gtacgtagca gagcagctcc ctcgctgcga 120
tctattgaaa ggtcgacgc 139

<210> 687
<211> 237
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 35, 41, 87, 121, 195
<223> n = A,T,C or G

<400> 687
ggccgccctt tttttttttt tttttttttt ttttnggaaa naaaagcagg gtttattttt 60
ctatcaaatc cccaatccat gttccancca atggatgaag ggtgaatcaa gccccacata 120
nactcttggt aaaaacaatt ctaactttct aaaaaaaaaa aaaagccaac acactttttt 180
ctttctttta aaaangctcc caggcctttg ggaacagctg aaacaaattc atatcct 237

<210> 688
<211> 513
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 497
<223> n = A,T,C or G

<400> 688
ggccgcgtcg accgcggtcg taagggctga ggatttttgg tccgcacgct cctgctcctg 60
actcaccgct gttcgctctc gccgaggaac aagtcggtca ggaagcccgc gcgcaacagc 120
catggctttt aaggataccg gaaaaacacc cgtggagccg gaggtggcaa ttcaccgaat 180
tcgaatcacc ctaacaagcc gcaacgtaaa atccttggaa aaggtgtgtg ctgacttgat 240
aagaggcgca aaagaaaaga atctcaaagt gaaaggacca gttcgaatgc ctaccaagac 300
tttgagaatc actacaagaa aaactccttg tggtgaaggt tctaagacgt gggatcgttt 360
ccagatgaga attcacaagc gactcattga cttgcacagt ccttctgaga ttgttaagca 420
gattacttcc atcagtattg agccaggagt tgaggtggaa gtcaccattg cagatgctta 480
agtcaactat tttaatnaat tgatgaccag ttg 513

<210> 689
<211> 524
<212> DNA
<213> Homo sapiens

<400> 689
ggccgcgtcg actttttttt tttttttttt taacaaatct actttaattc taaaagaaat 60
taatctagaa ctgtcagtaa tacacaacat actttatgt ttcttttata ggtatctatc 120
taataaaagt ttatttgtgt atgtgcaatg cataactcta tcttagatat gaatcctaac 180
aggatgaaaa tactttcttg caactacttt atgcttatga aaggtgtgaa cttgcaatgt 240
cctcctgtct taaacccaag ttgacagtgc cctctcaaaa cttttcataa ataatgacct 300
aatttcattt aaaaaatggt ttcagcaaat atgaaaatag aaagtccgtt atttgtccat 360
ttgtaatatg agaaaaaaaa agatgataca ttcctctaca gaaaaagtgg gtttagagaa 420
cagttctggt agtatttcac atggtaaagt atcaaaagat ctaatgagca gccccccttgc 480
tcagggaaag acagtgattt caatgtgttt ctcttccgaa ttgc 524

<210> 690
<211> 59
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 54
<223> n = A,T,C or G

<400> 690
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt tggncggcc 59

<210> 691
<211> 389
<212> DNA
<213> Homo sapiens

<400> 691
ggccgcgtcg acaaatcttt aaaaattttc tttcatcaga ggtttcctca tatagatctt 60
agatatattt tgttagattt aaacctaagt atttcttttt ttttctttat ggtgaaatgt 120
aaatgatgtt gagttttaaa tttcaaattc cacctttca tttctgatat aggaaagaca 180
ttgactttta tatattagct ttgtatcctg aaaccttgct gttagttcca ggaatatttt 240
tgttgattct ttaggatctt caacatgtac agtcttgtca tctgtaaaca aaaacttttt 300
ttttcttcac aatttgtatt tctttatatc cttttcttgt ttatattagc taggattttt 360
agtatgatgc tggatttgag tggtgagag 389

<210> 692
<211> 562
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature

<222> 549
<223> n = A,T,C or G

<400> 692
ggccgcgtcg actgcttcct agaaggtcgt gtcacgtgga acctcttaat ctcagcatcc 60
ggagctccag gaagggaaaa tttcaagtca gatagaattc tatatatacc atttctttgg 120
aaccttcagc cctcaagatt ccaacatcat gacctcagtt tcaacacagt tgtccttagt 180
cctcatgtca ctgcttttgg tgctgcctgt tgtggaagca gtagaagccg gtgatgcaat 240
cgcccttttg ttaggtgtgg ttctcagcat tacaggcatt tgtgcctgct tggggggtata 300
tgcacgaaaa agaaatggac agatgtgact ttgaaaggcc tactgagtca aacctcaccc 360
tgaaaacctt tgcgctttag aggctaaacc tgagatttgg tgtgtgaaag gttccaagaa 420
tcagtaaata agggagtttc acatttttca ttgtttccat gaaatggcaa caaacataca 480
tttataaatt gaaaaaaaaa tgttttcttt acaacaaata atgcacagaa aaatgcagcc 540
tataatttnc tagttaggta gt 562

<210> 693
<211> 533
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 32, 40, 174, 184, 200, 237, 285, 307, 354, 411, 437, 451
<223> n = A,T,C or G

<400> 693
ggccgccctt tttttttttt tttttttttt tnaagttttn aaacttttta tttgcatatt 60
aaaaaaattg tgcattccaa taattaaaat catttgaaca aaaaaaaaat ggcactctga 120
ttaaactgca ttacagcctg caggacacct tgggccagct tggttttact ctanatttca 180
ctgncgtccc accccacttn ttccacccca cttcttcctt caccaacatg caagttnttt 240
ccttccctgc cagccagata gatagacaga tgggaaaggc aggcncggcc ttcgttgtca 300
gtagttnttt gatgtgaaag gggcagcaca gtcatttaaa cttgatccaa cctntttgca 360
tcttacaaag ttaaacagct aaaagaagta aaataagaag gcaatgcttg nggaatgtac 420
agtgcatatt ggcggcncac gcctcattac nattcgcctg cttgcttctc ctgttcaatc 480
gtttctttgg aaggcagggg atttttctct tgcgtctctg tcttcttcag ttt 533

<210> 694
<211> 484
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 35, 159, 167, 293, 373, 379, 383, 385, 450, 471
<223> n = A,T,C or G

<400> 694
ggccgccctt tttttttttt tttttttttt ggcanagcta gctgaggttt tattttggac 60
caaaaaaaaa agcaattgaa ttgttttgta gctggaggca tgggcaaggg gggtccccag 120
gtagtaaact ccccaggtgg gctgagggct agggctganc ctcaggnggg tctcctgttc 180
ccagtgctac cctgcatagc ggcctccttc ccaggctctg ggcagcgca ggaggggtag 240
gctgggaggg gctgccgcag ctgttcactt gggcaggacg tcagaggact canacaccag 300
cttcccatca cgtgtctcga tcttcttcac aaccacggcc ctggaggagc tggtgcggct 360
gaaggagctg ganccccgcnc canancccaa gctggagccc aggctgtagc tgaggccggg 420
gcttgtgagg cccccatagg ccgagctcan accacctgca tagccgctgg nggtcttcgt 480
atga 484

<210> 695
<211> 492
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 31, 92, 121, 279, 304, 315, 348, 441, 475
<223> n = A,T,C or G

<400> 695
ggccgccctt tttttttttt ttttgatgtt ngaaattcaa gtaactttat ttaaattcaa 60
aaacaattct taaaactgca tttagagtca anaccctttt gtattataaa aatcacaagt 120
ntttctaaga gacaaaaata cttctaggtt aactagacca gatctgactt tggactttat 180
tctttaaaca aattgcagag aatagagaaa aaaataggtt atttacagaa aacaatatct 240
acatatgtac ttagaggtac aaatttggtg acagaaaana cttcagtata tgctggcatc 300
ttanaagcag ttctnaaaga gcttagtttt atttcttgga attttaanaa tgcctaagat 360
ccttcttcat cctcgatctt gggagccaag tagtatttta agtgtcccat atccgcaatt 420
ttatactcta caacaagggg nacatctgca gacatactga gtgtcaccgt tgaanagagt 480
ggagtggctt tt 492

<210> 696
<211> 538
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 125, 350, 454
<223> n = A,T,C or G

<400> 696
ggccgcgtcg acgcggcggc aggagaggtt gtggtgctag tttctctaag ccatccagtg 60
ccatcctcgt cgctgcagcg acacacgctc tcgccgccgc catgactgag cagatgaccc 120
ttcgnggcac cctcaagggc cacaacggct gggtaaccca gatcgctact accccgcagt 180
tcccggacat gatcctctcc gcctctcgag ataagaccat catcatgtgg aaactgacca 240
gggatgagac caactatgga attccacagc gtgctctgcg gggtcactcc cactttgtta 300
gtgatgtggt tatctcctca gatggccagt ttgccctctc aggctcctgn gatggaaccc 360
tgcgcctctg ggatctcaca acgggcacca ccacgaggcg atttgtgggc cataccaagg 420
atgtgctgag tgtggccttc tcctctgaca accnggcaga ttgtctctgg atctcgagat 480
aaaaccatca agctatggaa taccctgggt gtgtgcaaat acactgtcca ggatgaga 538

<210> 697
<211> 508
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 103, 137, 255
<223> n = A,T,C or G

<400> 697
ggccgccctt tttttttttt tttttagttt ataatgtttt actatgattt agggcttttt 60
tttcaaagaa caaaaattat aagcataaaa actcaggtat canaaagact caaaaggctg 120
tttttcactt tgttcanatt ttgtttccag gcattaagtg tgtcatacag ttgttgccac 180
tgctgttttc caaatgtccg atgtgtgcta tgactgacaa ctacttttct ctgggtctga 240
tcaattttgc agtanaccat tttagttctt acggcgtcaa taacaaatgc ttcaacatca 300
tcagctccaa tctgaagttc ttgctgcatt gtgtcaaaag aaatttcctt attttctact 360
gccattccca taaaagtaag tagtctcatt tttgccatat tctgttcatg taacaggcca 420
agtgaatcaa tgaagtcttt attattctga taaaacttga catatgatgc caatttagca 480
ctcacaaaaa tggttaaaag atcatgaa 508

<210> 698
<211> 474
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 27, 47, 118, 121, 223, 265, 268, 326, 362, 378, 459, 464
<223> n = A,T,C or G

<400> 698
ggccgccctt tttttttttt tttcagngga aaataacttt tattganacc ccaccaactg 60
caaaatctgt tcctggcatt aagctccttc ttcctttgca attcggtctt tcttcagngg 120
ncccatgaat gctttcttct cctccatggt ctggaagcgg ccatggccaa acttggaggt 180
ggtgtcaatg aacttaaggt caatcttctc cagagcccgc cgnttcgtct gcaccagcaa 240
ggacttgcgg agggtgagca cccgnttntt ggttcccacc acacagcctt tcagcatgac 300
aaagtcattg gtcacttcac catagnggac aaagccaccc agagggttga tgctcttgtc 360
anataggtca tagtcagngg aggcattgtt cttgatcagc ttgccgtcct tgataaggta 420
gccctggcca atcttataaa tcttcttgtt gatctcagng cggngatggt agcc 474

<210> 699
<211> 573
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 287
<223> n = A,T,C or G

<400> 699
ggccgcgtcg accctcgtgt gaagggtgca gtacctaagc cggagcgggg tagaggcggg 60
ccggcacccc cttctgacct ccagtgccgc cggcctcaag atcagacatg gcccagaact 120
tgaaggactt ggcgggacgg ctgcccgccg ggccccgggg catgggcacg gccctgaagc 180
tgttgctggg ggccggcgcc gtggcctacg gtgtgcgcga atctgtgttc accgtggaag 240
gcgggcacag agccatcttc ttcaatcgga tcggtggagt gcagcangac actatcctgg 300
ccgagggcct tcacttcagg atcccttggt tccagtaccc cattatctat gacattcggg 360
ccagacctcg aaaaatctcc tcccctacag gctccaaaga cctacagatg gtgaatatct 420
ccctgcgagt gttgtctcga cccaatgctc aggagcttcc tagcatgtac cagcgcctag 480
ggctggacta cgaggaacga gtgttgccgt ccattgtcaa cgaggtgctc aagagtgtgg 540
tggccaagtt caatgcctca cagctgatca ccc 573

<210> 700
<211> 570
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 500
<223> n = A,T,C or G

<400> 700
ggccgcgtcg accttgcaag atggcgggtg aaaaagttga gaagccagat actaaagaga 60
agaaacccga agccaagaag gttgatgctg gtggcaaggt gaaaaagggt aacctcaaag 120
ctaaaaagcc caagaagggg aagcccccatt gcagccgcaa ccctgtcctt gtcagaggaa 180
ttggcaggta ttcccgatct gccatgtatt ccagaaaggc catgtacaag aggaagtact 240
cagccgctaa atccaaggtt gaaaagaaaa agaaggagaa ggttctcgca actgttacaa 300
aaccagttgg tggtgacaag aacggcggta cccgggtggt taaacttcgc aaaatgccta 360
gatattatcc tactgaagat gtgcctcgaa agctgttgag ccacggcaaa aaacccttca 420
gtcagcacgt gagaaaactg cgagccagca ttaccccccgg gaccattctg atcatcctca 480
ctggacgcca caggggcaan gaggggtggt tttcctgaag cagctggcta gtggcttatt 540
acttgtgact ggacctctgg tcctcaatcg 570

<210> 701
<211> 411

<212> DNA
<213> Homo sapiens

<400> 701
ggccgcgtcg acgtggccac tgcgcagacc agacttcgct cgtactcgtg cgcctcgctt 60
cgcttttcct ccgcaaccat gtctgacaaa cccgatatgg ctgagatcga gaaattcgat 120
aagtcgaaac tgaagaagac agagacgcaa gagaaaaatc cactgccttc caaagaaacg 180
attgaacagg agaagcaagc aggcgaatcg taatgaggcg tgcgccgcca atatgcactg 240
tacattccac aagcattgcc ttcttatttt acttctttta gctgtttaac tttgtaagat 300
gcaaagaggt tggatcaagt ttaaatgact gtgctgcccc tttcacatca aagaactact 360
gacaacgaag gccgcgcctg cctttcccat ctgtctatct atctggctgg c 411

<210> 702
<211> 85
<212> DNA
<213> Homo sapiens

<400> 702
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaccattcg 60
taacgacctg cttctgggtc ggggt 85

<210> 703
<211> 58
<212> DNA
<213> Homo sapiens

<400> 703
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt tttcccgg 58

<210> 704
<211> 501
<212> DNA
<213> Homo sapiens

<400> 704
ggccgcgtcg actgttattg cttggacacc attgcagaaa atcaagccaa aaatgagcac 60
ctgcagaaag aaaatgaaag gcttctgaga gattggaatg atgttcaagg acgatttgaa 120
aaatgtgtga gtgctaagga agctttggag actgatcttt ataagcggtt tattctggtg 180
ttgaatgaga agaaaacaaa aatcagaagt ttgcataata aattattaaa tgcagctcaa 240
gaacgagaaa aggacatcaa acaagaaggg gaaactgcaa tctgttctga aatgactgct 300
gaccgagatc cagtctatga tgagagtact gatgaggaaa gtgaaaacca aactgatctc 360
tctgggttgg cttcagctgc tgtaagtaaa gatgattcca ttatttcaag tcttgatgtc 420
actgatattg caccaagtag aaaaaggaga cagcgaatgc aaagaaatct tgggacagaa 480
cctaaaatgg ctcctcagga g 501

<210> 705
<211> 53
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 34, 42, 46
<223> n = A,T,C or G

<400> 705
ggccgccctt tttttttttt tttttttttt tttnaaaaaa anccantttt ttt 53

<210> 706
<211> 154
<212> DNA
<213> Homo sapiens

<400> 706
gcccattctc cgccccatgg ctgactaatt ttttttattt atgcagaggc cgaggccgcc 60
tctgcctctg agctattcca gaagtagtga ggaggctttt ttggaggcct aggcttttgc 120
aaaaagctcc cgggagcttg tatatccatt ttcg 154

<210> 707
<211> 562
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 509
<223> n = A,T,C or G

<400> 707
ggccgcgtcg acctcaaatc aatagatcca gaaaaagtag aatcgcgtaa ataaaagatt 60
ttattcagtt tccagaaaga ggggggaatg aaagacccca ccataaggct tagcaagcta 120
gctgcagtaa cgccattttg caaggcatga aaaagtacca gagctgagtt ctcaaaagtc 180
acaaggaagt ttagttaaag aataaggctg aacaaaactg ggacaggggc caaacaggat 240
atctgtggtc gagcacctgg gccccggctc agggccaaga acagatggta ctcagataaa 300
gcgaaactag caacagtttc tggaaagtcc cacctcagtt tcaagttccc caaaagaccg 360
ggaaaaaccc caagccttat ttaaactaac caatcagctc gcttctcgct tctgtaaccg 420
cgctttttgc tccccagccc tataaaaagg gtaaaaaccc cacactcggt gcgccagtca 480
tccgatagac tgagtcgccc gggtacccng tgttcccaat aaagcctttt gctgtttgca 540
tccgaaaaaa aaaaaaaagg gc 562

<210> 708
<211> 486
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 44, 156, 241, 303, 343, 356, 360, 376, 402, 408, 415, 465,
478
<223> n = A,T,C or G

<400> 708
ggccgccctt tttttttttt tttttttttt ttttttttta tttnaaatat ttttatttct 60
ccaaatttgt tatttatcag gagtgactga aataaaaaat acaattgagt cccatcatca 120
tcatcatgga aatggcttta agagaaaact ggtcanatga atattattgc ttcccatttt 180
caaccagtaa atagttgcca ctgaaaaact gacagccagg agtctgtcaa gaatgctcaa 240
natatgttat ataatacaac atgcctgttc acagggggaa aaatcctagg aaataactta 300
tgngtacttc ttgatttcat catacaagac aagcacaaaa gcnccaccca tgcctntgan 360
aacattggac catgcncccct tgaaaaaagc tttgcctcct tnatcacnag caatnttccg 420
ccagcagtca agcgtgcctg tgtacatgat gtcagttcct ttgcnccctg actgcatnat 480
catgcg 486

<210> 709
<211> 466
<212> DNA
<213> Homo sapiens

<400> 709
ggccgcgtcg acagatggcg gacattcaga ctgagcgtgc ctaccaaaag cagccgacca 60
tctttcaaaa caagaagagg gtcctgctgg gagaaactgg caaggagaag ctcccgcggt 120
actacaagaa catcggtctg ggcttcaaga cacccaagga ggctattgag ggcacctaca 180
ttgacaagaa atgccccttc actggtaatg tgtccattcg agggcggatc ctctctggcg 240
tggtgaccaa gatgaagatg cagaggacca ttgtcatccg ccgagactat ctgcactaca 300
tccgcaagta caaccgcttc gagaagcgcc acaagaacat gtctgtacac ctgtcccccct 360

gcttcaggga cgtccagatc ggtgacatcg tcacagtggg cgagtgccgg cctctgagca 420
agacagtgcg cttcaacgtg ctcaaggtca ccaaggctgc cggcac 466

<210> 710
<211> 108
<212> DNA
<213> Homo sapiens

<400> 710
ggccgccctt tttttttttt ttttttaaag cttcaagatg cttttatgtc aagggtgtgg 60
ggttgccctg cttggcctgc agtgctttgg ggccccatgt ggtggagg 108

<210> 711
<211> 164
<212> DNA
<213> Homo sapiens

<400> 711
ggccgcgtcg acgacacaag ggtttgtcga gggctgactt tcaatagatc gcagcgaggg 60
agctgctctg ctacgtacga aaccccgacc cagaagcagg tcgtctacga atggtttagc 120
gccaggttcc ccacgaacgt gcggtgcgtg acgggcgagg gggc 164

<210> 712
<211> 601
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 550, 589
<223> n = A,T,C or G

<400> 712
ggccgccctt tttttttttt ttttttggta gtgaatactt tattttgttg taaacaagtt 60
agttttgagg gtatttcctc gtggtcctcc tgccgtcact cgtccccatg ttccaatgat 120
gctgatcaac tgctttattc agtttcccat ctttcttctt gcccagtcat cgtagccttt 180
ctttttttaa acacatgatc cctagtactc atctttggag gacaaaaggc tttccatatg 240
ttagaaaaat ttgaatctca tagtactcac aacaatgagc agcattgtaa gttgtgatgc 300
attcatttgg attggaacat tctcaatcag tccttccact ctaagtaaat atttgtttct 360
cacagaacac aaggcagttc aaagggcctc ttgttagaga tttataggtg tatgaatggg 420
aaacatcata caagcagtga aaacaaaaat ctttccaggt tgtcggattt tctccttctt 480
ggtcttataa aaagcaacta gacatcttta atttaaaaaa tacatgcaca tatatacaat 540
agtgattggn atgttatttt tatccaaaac attatagagt ttatctcana tatactgagt 600
a 601

<210> 713
<211> 56
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 35, 37, 42, 56
<223> n = A,T,C or G

<400> 713
ggccgccctt tttttttttt tttttttttt ttttngnaca gnaagtaaaa tttatn 56

<210> 714
<211> 556
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 543
<223> n = A,T,C or G

<400> 714
ggccgcgtcg accatgatca cgccctcata atcattttcc ttatctgctt cctagtcctg 60
tatgcccttt tcctaacact cacaacaaaa ctaactaata ctaacatctc agacgctcag 120
gaaatagaaa ccgtctgaac tatcctgccc gccatcatcc tagtcctcat cgccctccca 180
tccctacgca tcctttacat aacagacgag gtcaacgatc cctcccttac catcaaatca 240
attggccacc aatggtactg aacctacgag tacaccgact acggcggact aatcttcaac 300
tcctacatac ttcccccatt attcctagaa ccaggcgacc tgcgactcct tgacgttgac 360
aatcgagtag tactcccgat tgaagccccc attcgtataa taattacatc acaagacgtc 420
ttgcactcat gagctgtccc cacattaggc ttaaaaacag atgcaattcc cggacgtcta 480
aaccaaacca ctttcaccgc tacacgaccg ggggtatact acggtcaatg ctctgaaatc 540
tgnggagcaa accaca 556

<210> 715
<211> 241
<212> DNA
<213> Homo sapiens

<400> 715
ggccgcgtcg acgtgggatc tcaccgtggg tccgattagc cttttctctg ccttgcttgc 60
ttgagcttca gcggaattcg aaatggctgg cggtaaggct ggaaaggact ccggaaaggc 120
caagacaaag gcggtttccc gctcgcagag agccggcttg cagttcccag tgggccgtat 180
tcatcgacac ctaaaatcta ggacgaccag tcatggacgt gtgggcgcga ctgccgctgt 240
g 241

<210> 716
<211> 74
<212> DNA
<213> Homo sapiens

<400> 716
ggccgcgtcg acgtgacgcc gtgtgggtgt gtggtatcac tggctgatct agctggtcct 60
gataccacac ccct 74

<210> 717
<211> 480
<212> DNA
<213> Homo sapiens

<400> 717
ggccgcgtcg accttgcgag tggagtgtcc gctgtgcccg ggcctgcacc atgagcgtcc 60
cggccttcat cgacatcagt gaagaagatc aggctgctga gcttcgtgct tatctgaaat 120
ctaaaggagc tgagatttca gaagagaact cggaaggtgg acttcatgtt gatttagctc 180
aaattattga agcctgtgat gtgtgtctga aggaggatga taaagatgtt gaaagtgtga 240
tgaacagtgt ggtatcccta ctcttgatcc tggaaccaga caagcaagaa gctttgattg 300
aaagcctatg tgaaaagctg gtcaaatttc gcgaaggtga acgcccgtct ctgagactgc 360
agttgttaag caacctttc cacgggatgg ataagaatac tcctgtaaga tacacagtgt 420
attgcagcct tattaaagtg gcagcatctt gtggggccat ccagtacatc ccaactgagc 480

<210> 718
<211> 505
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature

<222> 233
<223> n = A,T,C or G

<400> 718
ggccgccctt tttttttttt tttgattttt attctgtatt ttattactga aatatgttgt 60
cctactcatc ccaccccaca ataaaaatct gacccaggcc ccccatttct ttccctcatc 120
ccctcttcca ccacaccatc ccggaacaag tgctccagga ttccctgccc actggccatt 180
ttggagtgtg tccattgggt agcaatgtgg aaaccaccag ggcctttgtg ganaaaatgg 240
aggggggttga gggagtccca ggaggggctt atttgagggc ctttgccact tgctcatagg 300
cgagctcgat ctcctcatca tctggacagg tggaagcgaa ttcttcccgg gcgtaggcat 360
tgctcaagta ccgatgcact ccccggaagg cctcggggat ggtgaatccc cggtacttct 420
tacacaccac ctgtactatg tgtaactttg gcaacaggtt gcagtcagcc agggtgagct 480
cgttgccatc caaaaacttc ctctg 505

<210> 719
<211> 288
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 271
<223> n = A,T,C or G

<400> 719
ggccgcgtcg acagatggta ctcagataaa gcgaaactag caacagtttc tggaaagtcc 60
cacctcagtt tcaagttccc caaaagaccg ggaaaaaccc caagccttat ttaaactaac 120
caatcagctc gcttctcgct tctgtaaccg cgctttttgc tccccagccc tataaaaagg 180
gtaaaaaccc cacactcggc gcgccagtca tccgatagac tgagtcgccc gggtacccgt 240
gttcccaata aagccttttg ctgtttgcat ncgaaaaaaa aaaagggc 288

<210> 720
<211> 523
<212> DNA
<213> Homo sapiens

<400> 720
ggccgcgtcg accggcgaac gcggagagca cgccatgaag gcctcgggca cgctacgaga 60
gtacaaggta gtgggtcgct gcctgcccac ccccaaatgc cacacgccgc ccctctaccg 120
catgcgaatc tttgcgccta atcatgtcgt cgccaagtcc cgcttctggt actttgtatc 180
tcagttaaag aagatgaaga agtcttcagg ggagattgtc tactgtgggc aggtgtttga 240
gaagtccccc ctgcgggtga agaacttcgg gatctggctg cgctatgact cccggagcgg 300
cacccacaac atgtaccggg aataccggga cctgaccacc gcaggcgctg tcacccagtg 360
ctaccgagac atgggtgccc ggcaccgcgc ccgagcccac tccattcaga tcatgaaggt 420
ggaggagatc gcggccagca agtgccgccg gccggctgtc aagcagttcc acgactccaa 480
gatcaagttc ccgctgcccc accgggtcct gcgccgtcag cac 523

<210> 721
<211> 510
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 49, 58, 193, 340
<223> n = A,T,C or G

<400> 721
ggccgccctt tttttttttt tttcctcgtt ttgctttatt ttattctgng aaaataancc 60
ttattataaa tcacaatgaa atccacaaac caaaccccaa actctctagc aaaacaagac 120
ccccttgatg tataaagtca tcgctgacag gacagtcttt ttcagttatt gcttttgtcg 180
cttgtttctt ganaacatga ctccaataag gctcatggct gccaagccca ttcctgcaac 240

gcttgcagcg atgatgacat ctctgacctg gtcactgcgg gcgactccat agcgcagctc 300
attcacaaag tgctcgcagt tctcactggt cagcttgtan agcacctcct gccccaccag 360
ctcctccgcc cgctggatga ttttgctgca gggcagcggc gagtacttgt catcatgttt 420
gttgttgacc tggtacttgt cactcccggc cacatcatac agcaattcct tcttcacgat 480
ggccttgtca gtcagggcgg acatgacact 510

<210> 722
<211> 318
<212> DNA
<213> Homo sapiens

<400> 722
ggccgcgtcg actttttttt ttttacaagt tgcagatttg ttgccaaatg aacgagtttg 60
tagtattgct aacaaggaga agaattacta gcaagtcttg atgttacttt tgaagagtgt 120
gatgattgca tttaggaaga tatctaaact tctgtttcaa agcaaaaagt atgtgcaaat 180
ttcttactca tgacaaattc atataatata aaaacatgaa agttgtgagg tcaggttgtt 240
tggagaagta gaaaacttca gtagagttta tagataggca gtcttccttt ctggtttggc 300
cctgacagca gattaact 318

<210> 723
<211> 398
<212> DNA
<213> Homo sapiens

<400> 723
ggccgcgtcg acccgccgtt cagtcgccaa tatgcagctc tttgtccgcg cccaggagct 60
acacaccttc gaggtgaccg gccaggaaac ggtcgcccag atcaaggctc atgtagcctc 120
actggagggc attgccccgg aagatcaagt cgtgctcctg gcaggcgcgc ccctggagga 180
tgaggccact ctgggccagt gcggggtgga ggccctgact accctggaag tagcaggccg 240
catgcttgga ggtaaagtcc atggttccct ggcccgtgct ggaaaagtga gaggtcagac 300
tcctaaggtg gccaaacagg agaagaagaa gaagaagaca ggtcgggcta agcggcggat 360
gcagtacaac cggcgctttg tcaacgttgt gcccacct 398

<210> 724
<211> 399
<212> DNA
<213> Homo sapiens

<400> 724
ggccgcgtcg accttcactc agattagtgc aggtctaagg tttggaatct ccccctcatg 60
gagagaagct ttgtatggct gtcatgctta gacagtgatt cctgcaactt gaccttcagg 120
ctgggagagg tggagagcca tgcctgttct ccttccttgc tatggaattt gctgacacaa 180
tatcttccgc ctggtgctgg gcatatccta agaacttaca actttcctgt attatcctgt 240
gtgagcagct gtcaccttat tggggaaaa atgcctgaaa attagggggc acttcaagta 300
gatagcttct atttcctata tttgtcttat atacaagtat ttgcttttat caaataatt 360
ccaataaagc atttaaagt aaaaaaaaaa aaaaagggc 399

<210> 725
<211> 548
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 72, 328, 420, 512, 536
<223> n = A,T,C or G

<400> 725
ggccgccctt tttttttttt tttttgagct ttggacaaat ttattgaaac atacaggcgg 60
ctgttagcag anaaatcatt ccatgattga tgtgttacat ttggccacta ccttgaatgt 120
ataatttaaa aattatattt ttcacaacta agcctttggc caaaaaagtc atttagcaca 180
tctttaaaga tcaataagaa atggattttg gacattaaaa agatcaagtc actgaattaa 240

acagtagcaa cccccattaa tctagaatcc catagtgctg aaggtagagg tgtctgtgca 300
aagctagtca tttgttaaca gcaatcanaa gagatggggg caggcacacc tgtcagaggt 360
ggcagcagag ctggcaggac aggacggctg ggctggtctg gtcaggtgag catgtcccan 420
agacagcagc aacagagagc cgtccagcag gctgtgaggc aggtggatgg tcctagctca 480
tctcttcttt ggtcttctac cacatacact gnggttttag gaggctcctg aggtcnaccc 540
tgccagcc 548

<210> 726
<211> 548
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 97, 109, 112, 144, 175, 189, 263, 325, 331, 338, 355, 360, 367, 386, 455, 468, 475, 547
<223> n = A,T,C or G

<400> 726
ggccgccctt tttttttttt tttttttttt ttttttttttg ggttttgaca gtttattttg 60
aaggtcattt taaaaacaaa gttaaagaca atctganaaa aaaattgcnc anaatacact 120
cattaaatag gtatggttta tggngattaa atcaaaataa gggaaatatg ttatnttctg 180
caattccana aataggttct gttgtccgga aggttcttat acatccaaaa agagggaatg 240
atcatggcaa ttaaagctgc ctnttaatca tgtaaatcta cagtagcaac taaattttc 300
tgttcttccc attaagtcag tttcnatctt naaactgngc cttgtttttt aaaanataan 360
atgctanaaa ttcaatggga tttggnggtc tttcctttgc aagcacagca agtccctgta 420
ataagatagg cacaactgtc tgatccaggt aggcncgagt tggcaaanac tgganatcta 480
ccttctgctt tgatgacttt tctgcattaa tcttctcatt ttctactatt ctctcaacgt 540
tgtctgng 548

<210> 727
<211> 445
<212> DNA
<213> Homo sapiens

<400> 727
ggccgcgtcg acccaggatc tcgggctcgg aacgagactg cacggattgt tttaagaaaa 60
tggcagacaa accagacatg ggggaaatcg ccagcttcga taaggccaag ctgaagaaaa 120
cggagacgca ggagaagaac accctgccga ccaaagagac cattgagcag gagaagcgga 180
gtgaaatttc ctaagatcct ggaggatttc ctaccccgt cctcttcgag accccagtcg 240
tgatgtggag gaagagccac ctgcaagatg gacacgagcc acaagctgca ctgtgaacct 300
gggcactccg cgccgatgcc accggcctgt gggtctctga agggaccccc ccccaatcgg 360
actgccaaat tctccggttt gccccgggat attatagaaa attatttgta tgaataatga 420
aaataaaaca cacctcgtgg caaaa 445

<210> 728
<211> 569
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 505
<223> n = A,T,C or G

<400> 728
ggccgcgtcg acgtggccac tgcgcagacc agacttcgct cgtactcgtg cgcctcgctt 60
cgcttttcct ccgcaaccat gtctgacaaa cccgatatgg ctgagatcga gaaattcgat 120
aagtcgaaac tgaagaagac agagacgcaa gagaaaaatc cactgccttc caaagaaacg 180
attgaacagg agaagcaagc aggcgaatcg taatgaggcg tgcgccgcca atatgcactg 240
tacattccac aagcattgcc ttcttatttt acttctttta gctgtttaac tttgtaagat 300
gcaaagaggt tggatcaagt ttaaatgact gtgctgcccc tttcacatca aagaactact 360

gacaacgaag gccgcgcctg cctttcccat ctgtctatct atctggctgg cagggaagga 420
aagaacttgc atgttggtga aggaagaagt ggggtggaag aagtggggtg ggacgacagt 480
gaaatctaga gtaaaaccaa gctgncccaa ggtgtcctgc aggctgtaat gcagtttaat 540
cagagtgcca tttttttttt gttcaatga 569

<210> 729
<211> 555
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 453, 465, 520, 542
<223> n = A,T,C or G

<400> 729
ggccgcgtcg actttttttt tttctgaaaa aatgaaggca catttattaa atgactggga 60
gaaattccat agtatgtaga atgggaataa taatacataa cattgtattt tatgttccat 120
tttttaaaat gagtccaagg aagttaaaat attcttttaa ttaagacact caaagaaatg 180
aaataagaaa aattgatgca aggactcctt caagttaaga tttgtgatac aaatattttc 240
atcttttaac agggcaagct gatgtgttca catctcagtt tcaagctgcc tctttcacta 300
ggaacatcag tatttttttt taaaagcaca tttacaatgc tttcccatca cccttgctgt 360
gtttttgtag cacctatagc cataactggc acctgggggc ctgcgttgct ggcagtttcc 420
cttacatttc tttggagtct tttcaactgc tgnggtttta cttanaagtc agtgctttgc 480
atatttgatt tcctgagact gtttgaatag tctttctcan aaaactgtgc cagtctggct 540
gngaacagct cttct 555

<210> 730
<211> 602
<212> DNA
<213> Homo sapiens

<400> 730
ggccgcgtcg acctttagtt tattgtgtgc tggtctaagc aagctgagat catttgcaat 60
ggaaaacacg taacttgttt aaaagttttt ctggtagctt tagctttatg ctaaaaaaaa 120
taatgacatt gggtatctat ttctttctaa gactacatta gtaggaaaat aagtcttttc 180
atgcttatga tttagctgtt ttgtggtaat tgctttttaa aggaagttat taatatcata 240
agttattatt aatattttga acacaggtgg atgtgaagga ttttcattta aaaaccaagt 300
ggttttgact ttttctgttg aatgaacaac tgtgccttgt ggaattttttg cagaagtgtt 360
tatgctttgt tagcatttca acttgcatta ttataaagag gtattaatgc ctcagttatg 420
tgtttgtcaa tgtactggct gaggattcta tctcagctgt cttttctaac tgtgtaggtt 480
gagttttgaa cacgtgcttg tggacatcag gcctcctgcc agcagttctt gaagcttctt 540
tttcattcct gctactctac ctgtatttct cagttgcagc actgagtggt caaatacatt 600
tc 602

<210> 731
<211> 520
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 467, 468
<223> n = A,T,C or G

<400> 731
ggccgcgtcg acccgaagtg cagcaagatt gtcattgact ttgattcaat taacagcaga 60
ccgagtcaaa agcttcagtg agttacatct cattcaatct ccagaagatt gggattatcg 120
tcttctaaga ggttgctaat gcctttcatc ttgaagttac acataacttc ttactagcca 180
gtatggcaaa agtaggcatc taaagaatat aaagcctcaa atcttcctta ctgtctctct 240
tgtcacatgg aatctacatg tgtttgaact attgctttag gatttaaaat aggggagcct 300
gtggtggcct ggtgcacagg gctagaacga gagtgcctcc ccttcttgtg tcctggctgg 360

ctgggatgct ggtggctctt cagaggagca tcagctgtct gtcatctgct gcgatccggc 420
agcctctctt cactgctaca tgtgctggaa ggacaaataa ataattnngg ttgtgttctt 480
aatggggacg agcagacaca ctgatctgaa catctggccc 520

<210> 732
<211> 546
<212> DNA
<213> Homo sapiens

<400> 732
ggccgcgtcg acgccgccgc gtaggagcgt gcgttcgggc cctcttctcc cacctgttcg 60
actccccatc cccaggatgt caacctcagt ccctcaaggc catacctgga cccaacgggt 120
gaagaaagac gatgaggagg aggacccgct ggaccagctg atctcccgct ctggctgtgc 180
tgcctcccac tttgcagtgc aggagtgcat ggcccagcac caggactggc ggcaatgcca 240
gccacaggtg caggcgttca aggattgcat gagtgaacag caggcgaggc ggcaagagga 300
gctgcagagg aggcaagaac aagccggtgc ccaccactga gaccccaaac cacctatccc 360
cagtagatgg ccctgccaag accagcaccc agcaagatta tagaggaaga aatcctaaat 420
gctggtgtgg gaggtctaaa acatggggag agtttttgga tctggagttg agagccatgg 480
gtttggacat gactggcaca aacagctgtc atatgttcat ggtcagatgt catacattct 540
cagctg 546

<210> 733
<211> 589
<212> DNA
<213> Homo sapiens

<400> 733
ggccgcgtcg acatggcgca ggatcaaggt gaaaaggaga accccatgcg ggaacttcgc 60
atccgcaaac tctgtctcaa catctgtgtt ggggagagtg gagacagact gacgcgagca 120
gccaaggtgt tggagcagct cacagggcag acccctgtgt tttccaaagc tagatacact 180
gtcagatcct ttggcatccg gagaaatgaa aagattgctg tccactgcac agttcgaggg 240
gccaaggcag aagaaatctt ggagaagggt ctaaaggtgc gggagtatga gttaagaaaa 300
aacaacttct cagatactgg aaactttggt tttgggatcc aggaacacat cgatctgggt 360
atcaaatatg acccaagcat tggtatctac ggcctggact tctatgtggt gctgggtagg 420
ccaggtttca gcatcgcaga caagaagcgc aggacaggct gcattggggc caaacacaga 480
atcagcaaag aggaggccat gcgctggttc cagcagaagt atgatgggat catccttcct 540
ggcaaataaa ttcccgtttc tatccaaaag agcaataaaa gtttcagtg 589

<210> 734
<211> 184
<212> DNA
<213> Homo sapiens

<400> 734
ggccgcgtcg acggcgcccc gatctgccct ttaccctgct cttacccccct ctataaaacc 60
cagaccttct aaacctcagg ttctctccga taatggcgga cctctcattg accttctcac 120
agaagaccct ccgccgtacg gagaacaggg accgtcctcc tctgacggag atggcgacag 180
agaa 184

<210> 735
<211> 525
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 308
<223> n = A,T,C or G

<400> 735
ggccgcgtcg acggttgctg tccgcggagt ggaagcgcgt gcttttgttt gtgtccctgg 60
ccatggcgct gcagctctcc cgggagcagg gaatcaccct gcgcgggagc gccgaaatcg 120

tggccgagtt cttctcattc ggcatcaaca gcattttata tcagcgtggc atatatccat 180
ctgaaacctt tactcgagtg cagaaatacg gactcacctt gcttgtaact actgatcttg 240
agctcataaa atacctaaat aatgtggtgg aacaactgaa agattggtta tacaagtgtt 300
cagttcanaa actggttgta gttatctcaa atattgaaag tggtgaggtc ctggaaagat 360
ggcagtttga tattgagtgt gacaagactg caaaagatga cagtgcaccc agagaaaagt 420
ctcagaaagc tatccaggat gaaatccgtt cagtgatcag acagatcaca gctacggtga 480
catttctgcc actgttggaa gtttcttgtt catttgatct gctga 525

<210> 736
<211> 148
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 25, 117
<223> n = A,T,C or G

<400> 736
ggccgccctt tttttttttt ttggnaaagc tctgccataa acttctagcg tgtgccaatg 60
gtcacctgcc acactcgcac caggttgtcc gtgtagccag caaacagagt cgggccntca 120
gcagaccagg ccagggaggt gaactggg 148

<210> 737
<211> 517
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 501
<223> n = A,T,C or G

<400> 737
ggccgcgtcg acgccactgc gcagaccaga cttcgctcgt actcgtgcgc ctcgcttcgc 60
ttttcctccg caaccatgtc tgacaaaccc gatatggctg agatcgagaa attcgataag 120
tcgaaactga agaagacaga gacgcaagag aaaaatccac tgccttccaa agaaacgatt 180
gaacaggaga agcaagcagg cgaatcgtaa tgaggcgtgc gccgccaata tgcactgtac 240
attccacaag cattgccttc ttattttact tcttttagct gtttaacttt gtaagatgca 300
aagaggttgg atcaagttta aatgactgtg ctgccccttt cacatcaaag aactactgac 360
aacgaaggcc gcgcctgcct ttcccatctg tctatctatc tggctggcag ggaaggaaag 420
aacttgcatg ttggtgaagg aagaagtggg gtggaagaag tggggtggga cgacagtgaa 480
atctagagta aaaccaagct ngcccaaggt gtcctgc 517

<210> 738
<211> 303
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 272, 295
<223> n = A,T,C or G

<400> 738
ggccgcgtcg acctccagtc acctgcttgg cacttttcca agtgttcttt actttcattc 60
ctgctctaaa tcttgtctcg gtctctcact ctgccttata cccctcagtt gaattatttc 120
ttctgaggag gcaagaactg aggctgctgc agactgatat ggattcacca ctgctaacac 180
ctcctggttg gaactacagg aatagaactg gaaagggaaa aaaggcagca ttcaccacat 240
cccaatcctg aatccaagag tctaagatag tnccccactc ctatctcagg cttanaggat 300
tag 303

<210> 739
<211> 451
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 146, 154, 176, 217, 275, 372, 408, 447
<223> n = A,T,C or G

<400> 739
ggccgccctt ttttttttt ttttaggtat ataaactatt tattaacaga caaggcctac 60
agacttattt cttcttggac acacccacgg tgcggccacg gcggccagtg gtcttggtgt 120
gctggcctcg gacacgaagg ccccanaagt gacncagccc tctatgggcc cgaatnttct 180
tcagtcgctc caggtcttca cggagcttgt tgtccanacc attggctagg acctggctgt 240
attttccatc ctttacatcc ttctgtctgt tcaanaacca gtctgggatc ttgtactggc 300
gtggattctg cataatggtg atcacacgtt ccacctcatc ctcagtgagt tctcccgccc 360
tcttggtgag gncaatgtct gctttcctca acaccacatg agcatatntt cggcccacac 420
ccttaatggc agtgatggca aaggctnttt t 451

<210> 740
<211> 474
<212> DNA
<213> Homo sapiens

<400> 740
ggccgcgtcg acgctggaag gaactggtct gctcacactt gctggcttgc gcatcaggac 60
tggctttatc tcctgactca cggtgcaaag gtgcactctg cgaacgttaa gtccgtcccc 120
agcgcttgga atcctacggc ccccacagcc ggatcccctc agccttccag gtcctcaact 180
cccgcggacg ctgaacaatg gcctccatgg ggctacaggt aatgggcatc gcgctggccg 240
tcctgggctg gctggccgtc atgctgtgct gcgcgctgcc catgtggcgc gtgacggcct 300
tcatcggcag caacattgtc acctcgcaga ccatctggga gggcctatgg atgaactgcg 360
tggtgcagag caccggccag atgcagtgca aggtgtacga ctcgctgctg gcactgccgc 420
aggacctgca ggcggcccgc gccctcgtca tcatcagcat catcgtggct gctc 474

<210> 741
<211> 61
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 48, 49, 51, 60
<223> n = A,T,C or G

<400> 741
ggccgccctt ttttttttt ttttttttt ttttttttt tttttttnna nagtctgatn 60
t 61

<210> 742
<211> 109
<212> DNA
<213> Homo sapiens

<400> 742
ggccgcgtcg acggtggatg acagcttcag ccaggccctg gccatccgga gctataccaa 60
gttcgtgatg ggattgcag tgagcatgct gacctacccc ttcctgcta 109

<210> 743
<211> 499
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 413
<223> n = A,T,C or G

<400> 743
ggccgcgtcg acgttttcct gcgcaggagc cgcagggccg taggcagcca tggcgcccag 60
ccggaatggc atggtcttga agccccactt ccacaaggac tggcagcggc gcagtggcca 120
cgtggttcaa ccagccggcc cgtaagatcc gcagacgtaa ggcccggcaa gccaaggcgc 180
gccgcatcgc cccgcgcccc gcgtcgggtc ccatccggcc catcgtgcgc tgccccacgg 240
ttcggtacca cacgaaggtg cgcgccggcc gcggcttcag cctggaggag ctcagggtgg 300
ccggcattca caagaaggtg gcccggacca tcggcatttc tgtggatccg aggaggcgga 360
acaagtccac ggagtccctg cagaccaacg tgcagcggct gaaggagtac cgntccaaac 420
tcatcctctt ccccaggaag ccctcggccc ccaagaaggg agacagttct gctgaagaac 480
tgaaactggc cacccagct 499

<210> 744
<211> 339
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 31, 184, 217, 227, 237, 269, 272
<223> n = A,T,C or G

<400> 744
ggccgccctt tttttttttt tttttttcag nggaaaataa cttttattga gaccccacca 60
actgcaaaat ctgttcctgg cattaagctc cttcttcctt tgcaattcgg tctttcttca 120
gtggtcccat gaatgctttc ttctcctcca tggtctggaa gcggccatgg ccaaacttgg 180
atgngggtgtc aatgaactta aggtcaatct tctccanagc ccgccgnttc gtctgcncca 240
gcaaggactt gcggagggtg agcacccgnt tnttggttcc caccacacag cctttcagca 300
tgacaaagtc attggtcact tcaccatagt ggacaaagc 339

<210> 745
<211> 265
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 22, 167, 209, 251
<223> n = A,T,C or G

<400> 745
ggccgcgtcg accgccgccg antcgcgcgg aggcggaggc ttgggtgcgt tcaagattca 60
acttcacccg taacccaccg ccatggccga ggaaggcatt gctgctggag gtgtaatgga 120
cgttaatact gctttacaag aggttctgaa gactgccctc atccacnatg gcctagcacg 180
tggaattcgc gaagctgcca aagccttana caagcgccaa gcccatcttt gtgtgcttgc 240
atccaactgt natgagccta tgtat 265

<210> 746
<211> 505
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 394, 476
<223> n = A,T,C or G

<400> 746
ggccgcgtcg acccagggcg gcgcgtggtc tacgccgagt gacagagacg ctcaggctgt 60
gttctcagga tgaccgagtg ggagacagca gcaccagcgg tggcagagac cccagacatc 120
aagctctttg ggaagtggag caccgatgat gtgcagatca atgacatttc cctgcaggat 180
tacattgcag tgaaggagaa gtatgccaag tacctgcctc acagtgcagg gcggtatgcc 240
gccaaacgct tccgcaaagc tcagtgtccc attgtggagc gcctcactaa ctccatgatg 300
atgcacggcc gcaacaacgg caagaagctc atgactgtgc gcatcgtcaa gcatgccttc 360
gagatcatac acctgctcac aggcgagaac cctntgcagg tcctggtgaa cgccatcatc 420
aacagtggtc cccgggagga ctccacacgc attgggcgcg ccgggactgt gagacnacag 480
gctgtggatg tgtcccccct gcgcc 505

<210> 747
<211> 460
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 34, 35, 38, 52, 63, 92, 133, 143, 193, 277, 290, 300, 335, 341, 348, 357, 363, 364, 395, 427, 432, 438, 452, 453
<223> n = A,T,C or G

<400> 747
ggccgccctt tttttttttt tttttttttt tttnnaanaa ttgacaccca anaccatcct 60
ttnttgtagt attagttcat ggtaactgca tnaaaaaaca tttcaggaga aatttacaat 120
ttccagctta aanaacttgc ccnccaacat aaccaattta tgaaagtcaa ttcattaaaa 180
ggtataaaac ctnttgttgg gcatgatggc aagggacaaa gctacaactt ggcctgtgcc 240
tttggaagct gaggcaggag gaccatttga gcccagnagc ctgaaaccan cctgggcaan 300
ataaaaaatc cgtctcaaca aaaaaaaaat tttanccagg ngtgctgnga gctgtantcc 360
canntacaag gggggaggat tgcttaggcc tgggngattg aggatgcaat gagctgtgat 420
tgtgccncca cnctccancc tgggcaatac annaagactg 460

<210> 748
<211> 139
<212> DNA
<213> Homo sapiens

<400> 748
ggccgccccc tcgcccgtca cgcaccgcac gttcgtgggg aacctggcgc taaaccattc 60
gtagacgacc tgcttctggg tcggggtttc gtacgtagca gagcagctcc ctcgctgcga 120
tctattgaaa ggtcgacgc 139

<210> 749
<211> 81
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 73, 74
<223> n = A,T,C or G

<400> 749
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 60
tttttttggg ggnnccaaat t 81

<210> 750
<211> 174
<212> DNA
<213> Homo sapiens

<220>

<221> misc_feature
<222> 101, 107, 141, 147, 164, 166
<223> n = A,T,C or G

<400> 750
ggccgccctt tttttttttt tttttttttt ttttttttta ttacaaaggg cttatgatga 60
ttttattggc ctgccaaagg aaaacagtaa ataactccca ngtgttntgt tggaaattaa 120
tcatttggaa attatcactt ntttggngca ataatgcctt ccantngggc cttc 174

<210> 751
<211> 340
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 58, 68
<223> n = A,T,C or G

<400> 751
ggccgccctt tttttttttt tttttttcca ctttaatgtt tacaatttaa taaatctntt 60
cattgcanac atgtatggct gtttggtagt attcaaaaac atcacagtaa tggcagtttc 120
ttcaattggt gtgtagtcct caataattat atatgaaatt gctgtcaaac cagtaagact 180
gcatttatac atccatcatt ttcaggattg ttggtaacct gggcatattt tccccaaata 240
actttgcctc cttgcgtcac aaggcccaat tcgctcacat ttacttcaat gacagtacct 300
ttggtaataa cacccaaagt tgtatacagg gggatgaggg 340

<210> 752
<211> 355
<212> DNA
<213> Homo sapiens

<400> 752
ggccgcgtcg actgggcgag aagcaactag ggccctcatc acttcgccgc cgaatccccg 60
gcgccgccca gcggggcaga gccaggccag ggccgcccgc ccaacctggt ccgctgcctc 120
ttcggccatg gaagctgccg gcagccctgc ggctacggag acaggcaagt atatcgcgtc 180
aacacagcga cctgacggga cctggcgcaa gcagcggagg gtgaaagaag gatatgtgcc 240
ccaggaggag gtcccagtat atgaaaacaa gtatgtgaag tttttcaaga gtaaaccaga 300
gttgccccca gggctaagcc ctgaggccac tgctcctgtc accccatcca ggcct 355

<210> 753
<211> 463
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 121, 279, 304, 368, 393, 395, 436, 446
<223> n = A,T,C or G

<400> 753
ggccgccctt tttttttttt ttttgatgtt tgaaattcaa gtaactttat ttaaattcaa 60
aaacaattct taaaactgca tttagagtca agaccctttt gtattataaa aatcacaagt 120
ntttctaaga gacaaaaata cttctaggtt aactagacca gatctgactt tggactttat 180
tctttaaaca aattgcagag aatagagaaa aaaataggtt atttacagaa aacaatatct 240
acatatgtac ttagaggtac aaatttggtg acagaaaana cttcagtata tgctggcatc 300
ttanaagcag ttctcaaaga gcttagtttt attttcttga attttaagaa tgcctaagat 360
ccttcttnat cctcgatctt gggagccaag tantntttta agtgtcccat atccgcaatt 420
ttatactcta caacangggg tacatntgca gacatactga gtg 463

<210> 754
<211> 361

<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 147, 295, 331, 339
<223> n = A,T,C or G

<400> 754
ggccgcgtcg acccgtcgtc cgcaaagcct gagtcctgtc ctttctctct ccccggacag 60
catgagcttc accactcgct ccaccttctc caccaactac cggtccctgg gctctgtcca 120
ggcgcccagc tacggcgccc ggccggncag cagcgcggcc agcgtctatg caggcgctgg 180
gggctctggt tcccggatct ccgtgtcccg ctccaccagc ttcaggggcg gcatggggtc 240
cggggggcctg gccaccggga tagccggggg tctggcagga atgggaggca tccanaacga 300
gaaggagacc atgcaaagcc tgaacgaccg nctggcctnt tacctggaca gagtgaggag 360
c 361

<210> 755
<211> 542
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 473, 475
<223> n = A,T,C or G

<400> 755
ggccgcgtcg acatcagcgc cgcctttgaa ctgaaaagct ctcagtctaa cttcaactca 60
ctcaaatccg agcggcacga gcacctcctg tatcttcggc ttcccccccc cctttgctct 120
ttatatctga cttcttgttg ttgttggtgt tttttttttt tacccccctt ttttatttat 180
tattttttttg cacattgatc ggatccttgg gaacgagaga aaaaagaaac ccaaactcac 240
gcgtgcagaa gatctccccc cccttcccct cccctcctcc ctcttttccc ctccccagga 300
gaaaaagacc cccaagcaga aaaaagttca ccttggactc gtctttttct tgcaatattt 360
tttgggggggg caaaactttt tgggggtgat ttttttggc ttttcttcct ccttcatttt 420
tcttccaaaa ttgctgctgg tgggtgaaaa aaaaatgccg cagctgaacg gcngntggag 480
gggatgacct aggcgccaac gacgaactga tttccttcaa agacgagggc gaacaggagg 540
ag 542

<210> 756
<211> 213
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 50, 53, 80, 81, 93, 101, 111, 124, 137, 141, 162, 165
<223> n = A,T,C or G

<400> 756
ggccgccctt tttttttttt tttttttttt tttttttttt tttttgattn aanaaagttt 60
tatttttcca aatgtacagn ntggttggac ctnttcatgc nttttcacca ncagctggag 120
catntccacc cttggtnttt ntggggtaaa ttacttgagc tntgngcttt gaaaccagtt 180
tgataagtcc tttactaagg agctcctgaa ggg 213

<210> 757
<211> 613
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature

<222> 532, 606
<223> n = A,T,C or G

<400> 757
ggccgcgtcg accagagtgg tcgttgtctt tctaggtctc agccggtcgt cgcgacgttc 60
gcccgctcgc tctgaggctc ctgaagccga aaccagctag actttcctcc ttcccgcctg 120
cctgtagcgg cgttgttgcc actccgccac catgttcgag gcgcgcctgg tccagggctc 180
catcctcaag aaggtgttgg aggcactcaa ggacctcatc aacgaggcct gctgggatat 240
tagctccagc ggtgtaaacc tgcagagcat ggactcgtcc cacgtctctt tggtgcagct 300
caccctgcgg tctgagggct tcgacaccta ccgctgcgac cgcaacctgg ccatgggcgt 360
gaacctcacc agtatgtcca aaatactaaa atgcgccggc aatgaagata tcattacact 420
aagggccgaa gataacgcgg ataccttggc gctagtattt gaagcaccaa accaggagaa 480
agtttcagac tatgaaatga agttgatgga tttagatgtt gaacaacttg gnattccaga 540
acaggagtac agctgtgtag taaagatgcc ttctggtgaa tttgcacgta tatgccgaga 600
tctcanccat att 613

<210> 758
<211> 468
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 430, 458
<223> n = A,T,C or G

<400> 758
ggccgcgtcg acctctgccc caaaacccat caggccctgt gtaataccac ccagaaggcg 60
agcgacgggt cctactatct ggctgctccc gccgggacca tctgggcttg caacaccggg 120
ctcactccct gcctatctac cactgtactc aacctcacca ccgattactg tgtcctggtt 180
gagctctggc caaaggtgac ctaccactcc cctggttatg tttatgacca gtttgagaga 240
aaaaccaaat ataaaagaga gccggtgtca ttaactctgg ccctgctgtt gggaggactt 300
actatgggcg gcatagctgc aggagtagga acagggacta cagccctagt ggccaccaaa 360
caattcgagc agctccaggc agccatacat acagaccttg ggccttaga aaaatcagtc 420
agtgccctan aaaagtctct gacctcgttg tctgaggngg tcctacag 468

<210> 759
<211> 474
<212> DNA
<213> Homo sapiens

<400> 759
ggccgcgtcg acctcggcat catggccgcc ctcagacccc ttgtgaagcc caagatcgtc 60
aaaaagagaa ccaagaagtt catccggcac cagtcagacc gatatgtcaa aattaagcgt 120
aactggcgga aacccagagg cattgacaac agggttcgta gaagattcaa gggccagatc 180
ttgatgccca acattggtta tggaagcaac aaaaaaacaa agcacatgct gcccagtggc 240
ttccggaagt tcctggtcca caacgtcaag gagctggaag tgctgctgat gtgcaacaaa 300
tcttactgtg ccgagatcgc tcacaatgtt tcctccaaga accgcaaagc catcgtggaa 360
agagctgccc aactggccat cagagtcacc aaccccaatg ccaggctgcg cagtgaagaa 420
aatgagtagg cagctcatgt gcacgttttc tgtttaaata aatgtaaaaa ctgc 474

<210> 760
<211> 353
<212> DNA
<213> Homo sapiens

<400> 760
ggccgcgtcg acccagccag gaggcggagt ggaagtggcc gtggggcggg tatgggacta 60
gctggcgtgt gcgccctgag acgctcagcg ggctatatac tcgtcggtgg ggccggcggt 120
cagtctgcgg cagcggcagc aagacggtgc agtgaaggag agtgggcgtc tggcggggtc 180
cgcagtttca gcagagccgc tgcagccatg gccccaatca aggtgggaga tgccatccca 240
gcagtggagg tgtttgaagg ggagccaggg aacaaggtga acctggcaga gctgttcaag 300

ggcaagaagg gtgtgctgtt tggagttcct ggggccttca cccctggatg ttc 353

<210> 761
<211> 57
<212> DNA
<213> Homo sapiens

<400> 761
ggccgcgtcg acgcgaaact agcaacagtt tctggaaagt cccacctcag tttcaag 57

<210> 762
<211> 117
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 93, 94, 109
<223> n = A,T,C or G

<400> 762
ggccgccctt tttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 60
tttttttttt tttttttttt tttttttttt ttnnaaaaaa atttttttna aaaaaaa 117

<210> 763
<211> 537
<212> DNA
<213> Homo sapiens

<400> 763
ggccgcgtcg acggcggcag ccatcaggta agccaagatg ggtgcataca agtacatcca 60
ggagctatgg agaaagaagc agtctgatgt catgcgcttt cttctgaggg tccgctgctg 120
gcagtaccgc cagctctctg ctctccacag ggctccccgc cccacccggc ctgataaagc 180
gcgccgactg ggctacaagg ccaagcaagg ttacgttata tataggattc gtgttcgccg 240
tggtggccga aaacgcccag ttcctaaggg tgcaacttac ggcaagcctg tccatcatgg 300
tgttaaccag ctaaagtttg ctcgaagcct tcagtccgtt gcagaggagc gagctggacg 360
ccactgtggg gctctgagag tcctgaattc ttactgggtt ggtgaagatt ccacatacaa 420
atttttgag gttatcctca ttgatccatt ccataaagct atcagaagaa atcctgacac 480
ccagtggatc accaaaccag tccacaagca cagggagatg cgtgggctga catctgc 537

<210> 764
<211> 550
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 518
<223> n = A,T,C or G

<400> 764
ggccgcgtcg acgcggcggc aggagaggtt gtggtgctag tttctctaag ccatccagtg 60
ccatcctcgt cgctgcagcg acacacgctc tcgccgccgc catgactgag cagatgaccc 120
ttcgtggcac cctcaagggc cacaacggct gggtaaccca gatcgctact accccgcagt 180
tcccggacat gatcctctcc gcctctcgag ataagaccat catcatgtgg aaactgacca 240
gggatgagac caactatgga attccacagc gtgctctgcg gggtcactcc cactttgtta 300
gtgatgtggt tatctcctca gatggccagt ttgccctctc aggctcctgg gatggaaccc 360
tgcgcctctg ggatctcaca acgggcacca ccacgaggcg atttgtgggc cataccaagg 420
atgtgctgag tgtggccttc tcctctgaca accggcagat tgtctctgga tctcgagata 480
aaaccatcaa gctatggaat accctgggtg tgtgcaanac actgtccagg atgagagcca 540
ctcagagtgg 550

<210> 765
<211> 340
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 82, 116, 134, 138, 157, 195, 220, 241, 267, 282, 292, 313, 317
<223> n = A,T,C or G

<400> 765
ggccgcgtcg actttttttt tttttttttt tttttttttt gtttgaaatt caagtaactt 60
tatttaaatt caaaaacaat tnttaaaact gcatttagag tcaagaccct tttgtnttat 120
aaaaatcaca agtntttnta agagacaaaa atacttntag gttaactaga ccagatctga 180
ctttggactt tattntttaa acaaattgca gagaatagan aaaaaaatag gttatttaca 240
naaaacaata tctacatatg tacttanagg tacaaatttg gngacagaaa anacttcagt 300
atatgctggc atnttanaag cagttctcaa agagcttagt 340

<210> 766
<211> 197
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 9, 36, 87, 111, 126, 130, 137
<223> n = A,T,C or G

<400> 766
aaacaccant ttgccatcca ctatccggcg ggtggnggtc ttttggatgg tttgcatgga 60
gttgctgctg tccaaggcat caccaanatt aaagtcctcg ccatcttcca ncaggcggcg 120
gtaggnggcn atctcancct ccagcttgac cttgatgttc agcagggcct catactcctg 180
ggcctggcgc tgtccct 197

<210> 767
<211> 442
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 97, 363, 424
<223> n = A,T,C or G

<400> 767
ggccgcccctt tttttttttt ttttttttagg acattacctt tatttatgac ttaggtgaaa 60
catgaaacac aggagaccag actgttccaa acctaanaac aaggcttatt taaaacaaaa 120
caaaacaaac aaacaaaaaa aaagaaaaac aaacaaatat acggaaatca ccaactataa 180
atcatatgct aaaaccaaat aaaatgccag tatatccata cattaaaaat aaccaaattc 240
cttgaaactt acctttcctt aaccctttaa taataatcta ccctaacttt tcctccctgc 300
tctgaatctc tataacacac tttctataat tcatactgca cttctttata ttatctatat 360
tgnttttatg cagacaagca ttaattatat ctcaaactag acagtaggtt cctttgagga 420
gaanagactt tacagtcgac gc 442

<210> 768
<211> 578
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature

<222> 121, 135, 136, 296, 353, 488, 514, 547, 557
<223> n = A,T,C or G

<400> 768
ggccgcgtcg acgcgcaagt aggtctacaa gacgctactt cccctatcat agaagagctt 60
atcacctttc atgatcacgc cctcataatc attttcctta tctgcttcct agtcctgtat 120
ncccttttcc taacnntcac aacaaaacta actaatacta acatctcaga cgctcaggaa 180
atagaaaccg tctgaactat cctgcccgcc atcatcctag tcctcatcgc cctcccatcc 240
ctacgcatcc tttacataac agacgaggtc aacgatccct cccttaccat caaatnaatt 300
ggccaccaat ggtactgaac ctacgagtac accgactacg gcggactaat ctncaactcc 360
tacatacttc ccccattatt cctagaacca ggcgacctgc gactccttga cgttgacaat 420
cgagtagtac tcccgattga agccccatt cgtataataa ttacatcaca agacgtcttg 480
cactcatnag ctgtccccac attaggctta aaancagatg caattcccgg acgtctaaac 540
caaaccnctt tcaccgntac acgaccgggg gtatacta 578

<210> 769
<211> 483
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 441
<223> n = A,T,C or G

<400> 769
ggccgcgtcg accggcagga gaggttgtgg tgctagtttc tctaagccat ccagtgccat 60
cctcgtcgct gcagcgacac acgctctcgc cgccgccatg actgagcaga tgacccttcg 120
tggcaccctc aagggccaca acggctgggt aacccagatc gctactaccc cgcagttccc 180
ggacatgatc ctctccgcct ctcgagataa gaccatcatc atgtggaaac tgaccaggga 240
tgagaccaac tatggaattc cacagcgtgc tctgcggggt cactcccact ttgttagtga 300
tgtggttatc tcctcagatg gccagtttgc cctctcaggc tcctgggatg gaaccctgcg 360
cctctgggat ctcacaacgg gcaccaccac gaggcgattt gtgggccata ccaaggatgt 420
gctgagtgtg gccttctcct ntgacaaccg gcagattgtc tctggatctc gagataaaac 480
cat 483

<210> 770
<211> 556
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 134, 166, 267, 278, 338, 358, 387, 422, 436, 451, 484, 496
<223> n = A,T,C or G

<400> 770
ggccgcgtcg actttttttt tttttttttt tttttttttt ggttaaaaaa gtttaatgag 60
ctgtaaaata aatacacttc cattaaatat taaataaatt atttacaact tgaaaaaata 120
ctttttacct tcgngcacct ttatatacag aaatagcata aaaagngaca attgaaagtt 180
taaaaccatc ataacaaaaa gggtccattg tcttatgatc cactggaaaa aggaccgact 240
catcatttat ggctatgact tggcagngac tccaatgnga tatcctgtaa ttttatcttc 300
agttatgcta tagcatgtac atttccattc tcttgtcnaa gtttctttcg ttcctcanct 360
tctccttcat atttcctgac gtattgnctt ctaagctgga ctgtaataac agcaacagct 420
gngaggatca cagcanacat aaaggcagct ntggctgcta atgcaatttt tgataaacta 480
ctgncaatca tgctgngagt tttcatggac ttttccccac accgttcacc aaaatattct 540
tgctgacatt tgcatg 556

<210> 771
<211> 336
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 291
<223> n = A,T,C or G

<400> 771
ggccgcgtcg acggcggcag ccatcaggta agccaagatg ggtgcataca agtacatcca 60
ggagctatgg agaaagaagc agtctgatgt catgcgcttt cttctgaggg tccgctgctg 120
gcagtaccgc cagctctctg ctctccacag ggctccccgc cccacccggc ctgataaagc 180
gcgccgactg ggctacaagg ccaagcaagg ttacgttata tataggattc gtgttcgccg 240
tggtggccga aaacgcccag ttcctaaggg tgcaacttac ggcaagcctg nccatcatgg 300
tgttaaccag ctaaagtttg ctcgaagcct tcagtc 336

<210> 772
<211> 81
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 3, 4
<223> n = A,T,C or G

<400> 772
ggnngccctt tttttttttt tttgaactct gaacttttta ttggcctcct gctccccaaa 60
gggtaccctg cttctgctgg c 81

<210> 773
<211> 518
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 461
<223> n = A,T,C or G

<400> 773
ggccgcgtcg actttttttt taaagaagta agcctttatt tccttgtttt gcaaataaaa 60
ctggctaagt tggttgcttt ttggtgatta gtcaaagaga ccaaatccca tatcctcgtc 120
cgactcctcc gactcttcct tggcttcaac cttagctggg gctgcagcag cagcaggagc 180
agctgtggtg gcagcagcca caggggcagc agccacaaag gcagatggat cagccaagaa 240
ggccttgacc ttttcagcaa gtgggaaggt gtaatccgtc tccacagaca aggccaggac 300
tcgtttgtac ccgttgatga tagaatgggg tactgatgca acagttgggt agccaatctg 360
cagacagaca ctggcaacat tgcggacacc ctccaggaag cgagaatgca gagtttcctc 420
tgtgatatca agcacttcag ggttgtagat gctgccattg ncgaacacct gcttggatga 480
ccagcccaaa ggagaagggg gagatgttga gcatgttc 518

<210> 774
<211> 521
<212> DNA
<213> Homo sapiens

<400> 774
ggccgcgtcg acgcaacacc caaaggtggc ctgcggggag ccatcaccta ggactgactc 60
ggcagtgtgc agtggtgcat gcactgtctc agccaacccg ctccactacc cggcagggta 120
cacattcgca cccctacttc acagaggaag aaacctggaa ccagaggggg cgtgcctgcc 180
aagctcacac agcaggaact gagccagaaa cgcagattgg gctggctctg aagccaagcc 240
tcttcttact tcacccggct gggctcctca tttttacggg taacagtgag gctgggaagg 300
ggaacacaga ccaggaagct cggtgagtga tggcagaacg atgcctgcag gcatggaact 360
ttttccgtta tcacccaggc ctgattcact ggcctggcgg agatgcttct aaggcatggt 420

cggggggagag ggccaacaac tgtccctcct tgagcaccag ccccacccaa gcaagcagac 480
atttatcttt tgggtctgtc ctctctgttg cctttttac a 521

<210> 775
<211> 549
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 235, 247, 324, 386, 396, 467, 488
<223> n = A,T,C or G

<400> 775
ggccgccctt tttttttttt tttcggatgc aaacagcaaa aggctttatt gggaacacgg 60
gtacccgggc gactcagtct atcggatgac tggcgcaccg agtgtggggt ttttacccttt 120
tttatagggc tggggagcaa aaagcgcggt tacagaagcg agaagcgagc tgattggtta 180
gtttaaataa ggcttggggt ttttcccggt cttttgggga acttgaaact gaggngggac 240
tttccanaaa ctgttgctag tttcgcttta tctgagtacc atctgttctt ggccctgagc 300
cggggcccag gtgctcgacc acanatatcc tgtttggccc ctgtcccagt tttgttcagc 360
cttattcttt aactaaactt ccttgngact tttganaact cagctctggt actttttcat 420
gccttgcaaa atggcgttac tgcagctagc ttgctaagcc ttatggnggg gtctttcatt 480
cccccctntt tctggaaact gaataaaatc ttttattcac gcgattctac ttcttctgga 540
tctattgat 549

<210> 776
<211> 488
<212> DNA
<213> Homo sapiens

<400> 776
ggccgcgtcg accgagcagg aggcgccatc atgggagtgg acatccgcca taacaaggac 60
cgaaaggttc ggcgcaagga gcccaagagc caggatatct acctgaggct gttggtcaag 120
ttatacaggt ttctggccag aagaaccaac tccacattca accaggttgt gttgaagagg 180
ttgtttatga gtcgcaccaa ccggccgcct ctgtcccttt cccggatgat ccggaagatg 240
aagcttcctg gccgggaaaa caagacggcc gtggttgtgg ggaccataac tgatgatgtg 300
cgggttcagg aggtacccaa actgaaggta tgtgcactgc gcgtgaccag ccgggcccgc 360
agccgcatcc tcagggcagg gggcaagatc ctcactttcg accagctggc cctggactcc 420
cctaagggct gtggcactgt cctgctctcc ggtcctcgca agggccgaga ggtgtaccgg 480
catttcgg 488

<210> 777
<211> 527
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 253, 388, 390
<223> n = A,T,C or G

<400> 777
ggccgcgtcg actggggctg cagcgctgcc tccgagaccg cgaggtgggt ggagcgggtc 60
ttcctggaag ggtgcgataa ggccgggcga ggtgcctggg atgcttctcc ccttccgcga 120
ggaagagatc taattgggta gggcgggtgt agactagcct gccgagccgc ccgctggcac 180
ctgcagcctc ctgggcgccc gccgggcccc ggcgagaaag ttgttaaagg gagcgaggtg 240
gttgttcctg ggntccgagg cgcgcctctc acgccctgcc caacagaagc cgcagtcccg 300
tggggtctgg agacgcagtt tcctgttaat gacaataaat ccctgctccc cctgcctcag 360
acatctacgc agcgaaatcg agcctggncn tgagggtcca caccgcgagg gaagatgcgt 420
gcgcccattc cagagcctaa gcctggagac ctgattgaga tttttcgccc tttctacaga 480
cactgggcca tctatgttgg cgatggatat gtggttcatc tggcccc 527

<210> 778
<211> 334
<212> DNA
<213> Homo sapiens

<400> 778
ggccgcgtcg acgaagaaga tcgagacacg tgatgggaag ctggtgtctg agtcctctga 60
cgtcctgccc aagtgaacag ctgcggcagc ccctcccagc ctacccctcc tgcgctgccc 120
cagagcctgg gaaggaggcc gctatgcagg gtagcactgg gaacaggaga cccacctgag 180
gctcagccct agccctcagc ccacctgggg agtttactac ctggggaccc cccttgccca 240
tgcctccagc tacaaaacaa ttcaattgct tttttttttt ggtccaaaat aaaacctcag 300
ctagctctgc caaaaaaaaa aaaaaaaaaa gggc 334

<210> 779
<211> 356
<212> DNA
<213> Homo sapiens

<400> 779
ggccgcgtcg acgctgatac ctgaagcact cccaggctca tcctgggagc tttcctcagc 60
accttcacct tccctcccag tgtagcctcc tgtcagtggg ggctggaccc ttctaattca 120
gaggtctcat gcctgccctt gcccagatgc ccagggtcgt gcactctctg ggataccagt 180
tcagtctcca catttctggt tttctgtccc catagtacag ttcttcagtg gacatgaccc 240
cacccagccc cctgcagccc tgctgcacca tctcaccaga cacaagggga agaagcagac 300
atcaggtgct gcactcactt ctgccccctg gggagttggg gaaaggaacg aacccct 356

<210> 780
<211> 363
<212> DNA
<213> Homo sapiens

<400> 780
ggccgccctt tttttttttt tttaaagaag taagccttta tttccttgtt ttgcaaataa 60
aactggctaa gttggttgct ttttggtgat tagtcaaaga gaccaaatcc catatcctcg 120
tccgactcct ccgactcttc cttggcttca accttagctg ggctgcagc agcagcagga 180
gcagctgtgg tggcagcagc cacaggggca gcagccacaa aggcagatgg atcagccaag 240
aaggccttga ccttttcagc aagtgggaag gtgtaatccg tctccacaga caaggccagg 300
actcgtttgt acccgttgat gatagaatgg ggtactgatg caacagttgg gtagccaatc 360
tgc 363

<210> 781
<211> 485
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 295, 302, 373, 474, 479
<223> n = A,T,C or G

<400> 781
ggccgccctt tttttttttt ttttttcaat gttcagtttc ctttaatgac ccccatctcc 60
ctgaagggca ggtgcaggca gctaggtgat ggcaagagat gttcacttga agatcttgcc 120
ctgattgaag gctttgccca catgctggaa ggccccctcc caggaaaagt actctcgaac 180
cagcgtctgg gtctcctcgc tgccaggatc cagtttccgc catgtgtatg actcgtagtc 240
cacctgccaa tctggactca gcggaaaggc aagctcctgg cctcggaaga cccanactcc 300
anaaatggag ctgctattgt tggttccaaa aaggatgaca ctggcgaagg cattcttcct 360
cagcttgtcc agncgctgga acattccagt gatgagattg cagctcatga aggtctgagt 420
gagttcttca gggaagcgat actctgagta ccacagggac cagccgtcct tatnaaagng 480
ctccc 485

<210> 782

<211> 531
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 179, 244, 245, 299
<223> n = A,T,C or G

<400> 782
ggccgcgtcg actgctgggg ctgcagcgct gcctccgaga ccgcgagaca tctacgcagc 60
gaaatcgagc ctggccttga gggtccacac cgcgagggaa gatgcgtgcg cccattccag 120
agcctaagcc tggagacctg attgagattt ttcgcccttt ctacagacac tgggccatnt 180
atgttggcga tggatatgtg gttcatctgg cccctccaag tgaggtcgca ggagctggtg 240
cagnnagtgt catgtccgcc ctgactgaca aggccatcgt gaagaaggaa ttgctgtang 300
atgtggccgg gagtgacaag taccaggtca acaacaaaca tgatgacaag tactcgccgc 360
tgccctgcag caaaatcatc cagcgggcgg aggagctggt ggggcaggag gtgctctaca 420
agctgaccag tgagaactgc gagcactttg tgaatgagct gcgctatgga gtcgcccgca 480
gtgaccaggt cagagatgtc atcatcgctg caagcgttgc aggaatgggc t 531

<210> 783
<211> 541
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 188
<223> n = A,T,C or G

<400> 783
ggccgccctt tttttttttt tttacaaaaa aatcaagttt ttatttcaaa tatttgaatc 60
taatagatca ttatttaggt ttatactctg tgaatatata tatgatattg tatttaatta 120
atatctgagt aatctcaatt accattttct aggaaggata gagtgtaaga gctaaacatt 180
tcatgtanaa atattaactt tcaaaagtta taataccaga gttttagagt gaaggagtat 240
ttaaaatgtg tctttctttg ggagagaatc attttgttct ttactaacaa taatttgaaa 300
attggtaatt taatatcttg tgaatatgaa aatattatgg tatagattag cttctaggag 360
aagttaagtg tagcatgatt tcttgaagat taaaaaaaca tttaactttt taaagataat 420
atgcatattg aatattattt gaacataata gtaaagaaaa ttatctttga gctttttgga 480
atatatggca tttgcaaaat aacattagct cttatgcatg aaataaattg taactagatt 540
t 541

<210> 784
<211> 547
<212> DNA
<213> Homo sapiens

<400> 784
ggccgcgtcg acgcggcggc aggagaggtt gtggtgctag tttctctaag ccatccagtg 60
ccatcctcgt cgctgcagcg acacacgctc tcgccgccgc catgactgag cagatgaccc 120
ttcgtggcac cctcaagggc cacaacggct gggtaaccca gatcgctact accccgcagt 180
tcccggacat gatcctctcc gcctctcgag ataagaccat catcatgtgg aaactgacca 240
gggatgagac caactatgga attccacagc gtgctctgcg ggtcactcc cactttgtta 300
gtgatgtggt tatctcctca gatggccagt ttgccctctc aggctcctgg gatggaaccc 360
tgcgcctctg ggatctcaca acgggcacca ccacgaggcg atttgtgggc cataccaagg 420
atgtgctgag tgtggccttc tcctctgaca accggcagat tgtctctgga tctcgagata 480
aaaccatcaa gctatggaat accctgggtg tgtgcaaata cactgtccag gatgagagcc 540
actcaga 547

<210> 785
<211> 508
<212> DNA

<213> Homo sapiens

<220>
<221> misc_feature
<222> 296, 340, 467
<223> n = A,T,C or G

<400> 785
ggccgccctt tttttttttt tttgaaattc aagtaacttt atttaaattc aaaaacaatt 60
cttaaaactg catttagagt caagaccctt ttgtattata aaaatcacaa gtatttctaa 120
gagacaaaaa tacttctagg ttaactagac cagatctgac tttggacttt attctttaaa 180
caaattgcag agaatagaga aaaaaatagg ttatttacag aaaacaatat ctacatatgt 240
acttagaggt acaaatttgg tgacagaaaa gacttcagta tatgctggca tcttanaagc 300
agttctcaaa gagcttagtt ttattttctt gaattttaan aatgcctaag atccttcttc 360
atcctcgatc ttgggagcca agtagtattt taagtgtccc atatccgcaa ttttatactc 420
tacaacaagg ggtacatctg cagacatact gagtgtcacc gttgaanaga gtggagtggc 480
ttttgtaaag aagttcaggt acctcagt 508

<210> 786
<211> 537
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 516
<223> n = A,T,C or G

<400> 786
ggccgcgtcg acgccgccga ctcacacaag gcaggtgggt gaggaaatcc agagttgcca 60
tggagaaaat tccagtgtca gcattcttgc tccttgtggc cctctcctac actctggcca 120
gagataccac agtcaaacct ggagccaaaa aggacacaaa ggactctcga cccaaactgc 180
cccagaccct ctccagaggt tggggtgacc aactcatctg gactcagaca tatgaagaag 240
ctctatataa atccaagaca agcaacaaac ccttgatgat tattcatcac ttggatgagt 300
gcccacacag tcaagcttta aagaaagtgt ttgctgaaaa taaagaaatc cagaaattgg 360
cagagcagtt tgtcctcctc aatctggttt atgaaacaac tgacaaacac ctttctcctg 420
atggccagta tgtccccagg attatgtttg ttgacccatc tctgacagtt agagccgata 480
tcactggaag atattcaaat cgtctctatg cttacnaacc tgcagataca gctctgt 537

<210> 787
<211> 485
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 25, 284
<223> n = A,T,C or G

<400> 787
ggccgccctt tttttttttt tttanattat aaaaacttcc tctttaatca aggcttttaa 60
catgaacaga tttcttgaat aaaatggaaa gtttccagta cactgaaaca taaatccgca 120
agtcaccaca catacaacac ccggcaggaa aaaacaaaaa cagcaagttt acatgatccc 180
tgtaacagcc atggtctcaa actcagatgc ttcctccatc tgccaagtgt gttctggata 240
cagagcacat cgtggcttct ggggtcacac tcagcttagg ctgngggtcc acagagcact 300
catctggctg ggctatggtg gtggtggctc tactcaagaa gcaaagcagt taccagcaca 360
ttcaaacagt gtattgaaca tcttttaaat atcaaagtga gaaacaagaa ggcaacataa 420
taatgttatc agaaagatgt taggaagtaa ggacagctgt gtaaagcttg aggctgaaaa 480
gtagc 485

<210> 788
<211> 498

<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 56, 124, 490
<223> n = A,T,C or G

<400> 788
ggccgccctt tttttttttt tttaaagtta gctaaattat ctttattttt ttttanaaac 60
agggtctcac tctgttgccc aggctggagt gcagtggcat gatcttagat cactaaagcc 120
tcanactcct gggctcaagt gatcctccca gcctcaacct cctaagtagc tgggatcaca 180
ggtgcgtgac actatgcgtg gctcaaattc tttttacttt gaaggccctg ctagaaactt 240
gctgctgctc taattcacga cttggagaga caaaactaaa aaagctgttg ctgggttcag 300
gtgctgtggg agaacccgca aaaaatggtc tgaactgaaa atctccatct ccatcgcccc 360
gatttcgaac aggtgtatta tccaaaggaa acttggagtt gttacctaat gggaagccaa 420
gaacaccaga ctgtgcaatc atggatggtt caagggtgcc ttcatggtta gcaatagtga 480
tgtttcgtan cctaaggc 498

<210> 789
<211> 486
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 7, 9, 10, 77, 104, 269, 286, 375, 473
<223> n = A,T,C or G

<400> 789
ggccgcntnn actgcaaggc ggcggcagga gaggttgtgg ctgctagttt ctctaagcca 60
tccagtgcca tcctcgncgc tgcagcgaca cacgctctcg ccgncgccat gactgagcag 120
atgacccttc gtggcaccct caagggccac aacggctggg taacccagat cgctactacc 180
ccgcagttcc cggacatgat cctctccgcc tctcgagata agaccatcat catgtggaaa 240
ctgaccaggg atgagaccaa ctatggaant ccacagcgtg ctctgngggg tcactcccac 300
tttgttagtg atgtggttat ctcctcagat ggccagtttg ccctctcagg ctcctgggat 360
ggaaccctgc gcctntggga tctcacaacg ggcaccacca cgaggcgatt tgtgggccat 420
accaaggatg tgctgagtgt ggccttcttc tctgacaacc ggcagattgt ctntggatct 480
cgagat 486

<210> 790
<211> 346
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 67, 258, 268, 298
<223> n = A,T,C or G

<400> 790
ggccgccctt tttttttttt tttcatctta atatgctttt taatcaatat gctattgatt 60
acagctnttt ctgaggaagc tggtcacacc caggggcata agggtggcga gcaggtgaca 120
aaaggatgcc ctgtaaactg aaacatgagt gtgtaaattg gggaaatgat tctgcaaata 180
caaagagaat tttaaagtta ctacagtctc tactaccaca tgtttgagtt cccccaaact 240
ctcctccacc ctcgagtncc cagctcanag ggagctccac tgatggaggg aggggcanac 300
gcatgcacag atgactgtgg gccaagggaa tgaggtgaag ggtgcc 346

<210> 791
<211> 531
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 276, 399, 457, 472, 498
<223> n = A,T,C or G

<400> 791
ggccgcgtcg actttttttt tttttttttt tcagtggaaa ataactttta ttgagacccc 60
accaactgca aaatctgttc ctggcattaa gctccttctt cctttgcaat tcggtctttc 120
ttcagtggtc ccatgaatgc tttcttctcc tccatggtct ggaagcggcc atggccaaac 180
ttggaggtgg tgtcaatgaa cttaaggtca atcttctcca gagcccgccg cttcgtctgc 240
accagcaagg acttgcggag ggtgagcacc cgcttnttgg ttcccaccac acagcctttc 300
agcatgacaa agtcattggt cacttcacca tagtggacaa agccacccag agggttgatg 360
ctcttgtcag ataggtcata gtcagtggag gcattgttnt tgatcagctt gccgtccttg 420
ataaggtagc cctggccaat cttataaatc ttcttgntga tctcagtgcg gngatggtag 480
cctttctgcc cagcgcgngc cacagagaag gctacacgag caggatgcca t 531

<210> 792
<211> 88
<212> DNA
<213> Homo sapiens

<400> 792
ggccgcgtcg acccagaagg gcacactttc atctaatttg gggtatcact gagctgaaga 60
caaagagaag gggagaaaa cctagcag 88

<210> 793
<211> 387
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 40, 58, 64, 101, 123, 132, 138, 165, 194, 219, 224, 238,
248, 262, 267, 276, 325, 330, 337, 345, 370, 371, 373, 384,
385
<223> n = A,T,C or G

<400> 793
ggccgccctt tttttttttt tttttttttt ttttcagggn aaaataactt ttattganac 60
cccnccaact gcaaaatctg ttcctggcat taagctcctt nttcctttgc aattcggtct 120
ttnttcaggg gncccatnaa tgctttcttc tcctccatgg tctgnaagcg gccatggcca 180
aacttggagg gggngtcaat gaacttaagg tcaatcttnt ccanagcccg ccgtttcntc 240
tgcaccanca aggacttgcg gngggtnagc acccgntttt tggttcccac cacacagcct 300
ttcagcatga caaagtcatt ggtcncttcn ccatagngga caaanccacc cagagggttg 360
atgctcttgn nanataggtc atannca 387

<210> 794
<211> 498
<212> DNA
<213> Homo sapiens

<400> 794
ggccgcgtcg actgcttgtt gaagccatca tgctgctgac agccacagca ccaggtcggc 60
agcaggtgcg ggaccaggga gcctacctga tccttcgaga gctgcagagt ctgggcagag 120
gtgggcgcat aggtacaagt gctgctttgt cagcctcact ccctgcagct ctcagctccc 180
tgttccctga gacctggcct caaagggctg acccagccat acgtagatcc tggggtcttt 240
ctaggactgt gcctccctgc ttgacctatg ctccaggacc ctgccctcaa cccttgtcag 300
ctccctaagt cttcctgttt cccagtctca gattgagtgg gtgctctcat tggcctctct 360
agctaggccg tctccctggt cagcttcctt gagcctgggc ctgaggattt cttcgaggaa 420
gagatggaac ggctgcctgt cgacttgcag tacctgccac cagacaagca gcgagaacct 480
gatgcagcct agtccctg 498

<210> 795
<211> 536
<212> DNA
<213> Homo sapiens

<400> 795
ggccgcgtcg acgcggcagc catcaggtaa gccaagatgg gtgcatacaa gtacatccag 60
gagctatgga gaaagaagca gtctgatgtc atgcgctttc ttctgagggt ccgctgctgg 120
cagtaccgcc agctctctgc tctccacagg gctccccgcc ccacccggcc tgataaagcg 180
cgccgactgg gctacaaggc caagcaaggt tacgttatat ataggattcg tgttcgccgt 240
ggtggccgaa aacgcccagt tcctaagggt gcaacttacg gcaagcctgt ccatcatggt 300
gttaaccagc taaagtttgc tcgaagcctt cagtccgttg cagaggagcg agctggacgc 360
cactgtgggg ctctgagagt cctgaattct tactgggttg gtgaagattc cacatacaaa 420
ttttttgagg ttatcctcat tgatccattc cataaagcta tcagaagaaa tcctgacacc 480
cagtggatca ccaaaccagt ccacaagcac agggagatgc gtgggctgac atctgc 536

<210> 796
<211> 717
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 46, 533, 567, 568, 591, 597, 610, 615, 647, 664, 675, 684
<223> n = A,T,C or G

<400> 796
agccatcagg taagccaaga tgggtgcata caagtacatc cagganctat ggagaaagaa 60
gcagtctgat gtcatgcgct ttcttctgag ggtccgctgc tggcagtacc gccagctctc 120
tgctctccac aggctccccg ccccacccgg cctgataaag cgcgccgact gggctacaag 180
ggccaagcaa ggttacgtta tatataggat tcgtgttcgc cgtggtggcc gaaaacgccc 240
agttcctaag ggtgcaactt acggcaagcc tgtccatcat ggtgttaacc agctaaagtt 300
tgctcgaagc cttcagtccc gttgcagagg gagcgaagct ggacgccact gtggggctct 360
tgagagtcct gaattcttac tgggttggtg aagattccac atacaaattt tttgaggtta 420
tcctcattga tccattccat aaagctatca gaagaaatct gacacccagt ggatcaccaa 480
accagtccac aagcacaggg gagatgcgtg ggcttgaca tcttgcaggc cgnaaagaac 540
ccgtgggctt tggaaaaggg gccacanntt ccaccacact atttggtggg ntcttcnccc 600
ggcagctttn ggaanaaggc gcaaatcttt tccagcttcc cccgttnccg gttaatatta 660
agtnaaaggt tgggnaaaaa ttcntacttt aataaaacaa atttaaggga caagtcc 717

<210> 797
<211> 739
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 17, 19, 694, 696
<223> n = A,T,C or G

<400> 797
gcgggaacaa gatggcngnc cccatacctc aagggttctc ttgtttatcg aggtttttgg 60
gctggtggtt tcggcagcca gttctggtga ctcagtccgc agctatagtt ccagtaagaa 120
ctaaaaaacg tttcacacct cctatttatc aacctaaatt taaaacagaa aaggagttta 180
tgcaacatgc ccggaaagca ggattggtta ttcctccaga aaaatcggac cgttccatac 240
atctggcctg tacagctggt atatttgatg cctatgttcc tcctgagggt gatgcacgca 300
tatcatctct ttcaaaggag ggactgatag agagaactga acgaatgaag aagactatgg 360
catcacaagt gtcaatccgg aggataaaag actatgatgc caactttaaa ataaaggact 420
tccctgaaaa agctaaggat atctttattg aagctcacct ttgtctaaat aactcagacc 480
atgaccgact tcataccttg gtaactgaac actgtttcc agacatgact tgggacatca 540
aatataagac cgtccgctgg agctttgtgg aatctttaga gccctctcat gttgttcaag 600

ttccgctgtt caagtatgat gaaccagggc aacgtgtacc ggccagatca ccgtacgcat 660
gcacacccgg cagactcttg gccatctatg accngnttgg cccggtgatg tatggacagg 720
aagatgtacc ccaaggatg 739

<210> 798
<211> 693
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 428, 429, 431, 481, 487, 490, 492, 494, 497, 505, 511, 516, 539, 554, 562, 575, 597, 641, 664, 682
<223> n = A,T,C or G

<400> 798
ctcgggctcg gaacgagact gcacggattg ttttaagaaa atggcagaca aaccagacat 60
gggggaaatc gccagcttcg ataaggccaa gctgaagaaa acggagacgc aggagaagaa 120
caccctgccg accaaagaga ccattgagca ggagaagcgg agtgaaattt cctaagatcc 180
tggaggattt cctacccccg tcctcttcga gaccccagtc gtgatgtgga ggaagagcca 240
cctgcaagat ggacacgagc cacaagctgc actgtgaacc tgggcactcc gcgccgatgc 300
caccggcctg tgggtctctg aagggacccc cccccaatcg gactgccaaa ttctccggtt 360
tgccccggga tattatagaa aattatttgt atgaataatg aaaataaaac acacctcgtg 420
gcatggcnna naaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaagggg 480
nggccgntcn antntanagg gcccntttaa ncccgntgat cagcctcgac tgtgccttnt 540
agttgccacc catntgttgt tngcccctcc cccgngcctt ccttgaccct ggaaggngcc 600
ctcccactgt cctttcctaa taaaatgagg aaattgcatc ncattgtctg agtaggggtc 660
attntttttt gggggggggg gnggggcagg aca 693

<210> 799
<211> 738
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 566, 568, 592, 654, 679, 685, 687, 724, 731
<223> n = A,T,C or G

<400> 799
cctttttttt tttttttcaa tgttcagttt cctttaatga cccccatctc cctgaagggc 60
aggtgcaggc agctaggtga tggcaagaga tgttcacttg aagatcttgc cctgattgaa 120
ggctttgccc acatgctgga aggccccctc ccaggaaaag tactctcgaa ccagcgtctg 180
ggtctcctcg ctgccaggat ccagtttccg ccatgtgtat gactcgtagt ccacctgcca 240
atctggactc agcggaaagg caagctcctg gcctcggaag acccagactc cagaaatgga 300
gctgctattg ttggttccaa aaaggatgac actggcgaag gcattcttcc tcagcttgtc 360
cagtcgctgg aacattccag tgatgagatt gcagctcatg aaggtctgag tgagttcttc 420
agggaagcga tactctgagt accacaggga ccagccgtcc ttatcaaagt gctcccagaa 480
atatggcagt gccacagaga gtgtgtcctc attggagtac ttgcgcttaa attcatccaa 540
caccaaggcc tcttgggcaa ggtgancnaa ggggtcttgg ccttgggctt ancagccagc 600
gcctgctcac attcatccat ctcctcctca ggaacagggg cagccgcctt tttntctcct 660
tcccttagcc tggggcttnt gcttntnttc ccggaaccct tcttttccgg ggggggcctt 720
ttanggtggg nctctgca 738

<210> 800
<211> 687
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 426, 557, 609, 635, 647, 687

<223> n = A,T,C or G

<400> 800
catatagtaa aacccagccc atgaccccta acaggggccc tctcagccct cctaatgacc 60
tccggcctag ccatgtgatt tcacttccac tccataacgc tcctcatact aggcctacta 120
accaacacac taaccatata ccaatgatgg cgcgatgtaa cacgagaaag cacataccaa 180
ggccaccaca caccacctgt ccaaaaaggc cttcgatacg ggataatcct atttattacc 240
tcagaagttt ttttcttcgc aggatttttc tgagcctttt accactccag cctagcccct 300
acccccccaat taggagggca ctggcccccca acaggcatca ccccgctaaa tcccctagaa 360
gtcccactcc taaacacatc cgtattactc gcatcaggag tatcaatcac ctgagctcac 420
catagnctaa tagaaaacaa ccgaaaccaa ataattcaag cactgcttat tacaatttta 480
ctgggtctct attttaccct cctacaaagc ctcagagaac ttcgagtctc ccttcgccat 540
ttccgacggc atctacngct caacattttt tgtagcccag gctttcacgg acttcacggc 600
attattggnt caactttcct cctatctgct tcatncgcca ctaatanttt actttacatt 660
ccaacattcc ttttggtttc aaagccn 687

<210> 801
<211> 667
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 330, 404, 570, 594, 601, 645, 667
<223> n = A,T,C or G

<400> 801
ctcggcaagt tctcccagga gaaagccatg ttcagttcga gcgccaagat cgtgaagccc 60
aatggcgaga agccggacga gttcgagtcc ggcatctccc aggctcttct ggagctggag 120
atgaactcgg acctcaaggc tcagctcagg gagctgaata ttacggcagc taaggaaatt 180
gaagttggtg gtggtcggaa agctatcata atctttgttc ccgttcctca actgaaatct 240
ttccagaaaa tccaagtccg gctagtacgc gaattggaga aaaagttcag tgggaagcat 300
gtcgtcttta tcgctcagag gagaattctn cctaagccaa ctcgaaaaag ccgtacaaaa 360
aataagcaaa agcgtcccag gagccgtact ctgacagctg tgcncgatgc catccttgag 420
gacttggtct tcccaagcga aattgtgggc aagagaatcc gcgtcaaact agatggcagc 480
cggctcataa aggttcattt ggacaaagca cagcagaaca atgtggaaca caaggttgaa 540
actttttctg gtgtctataa gaaacttacn ggcaaggatg ttaattttga attnccagag 600
nttcaattgt aaaccaaaat gacttaatta aaagtatata ttccngtaaa aaaaaaaaaa 660
aaagggn 667

<210> 802
<211> 193
<212> DNA
<213> Homo sapiens

<400> 802
ctaatacaaa attataaagc cttcagaggg tttggaccac atctctttgg aaaatagttt 60
gcaacatatt taagagatac ttgatgccaa aatgacttta tacaacgatt gtatttgtga 120
cttttaaaaa taattatttt attgtgtaat tgatttataa ataacaaaat ttttttaaa 180
aaaaaaaaaa aaa 193

<210> 803
<211> 132
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 41, 96
<223> n = A,T,C or G

<400> 803

cccctcgccc gtcacgcacc gcacgttcgt ggggaacctg ncgctaaacc attcgtagac 60
gacctgcttc tgggtcgggg tttcgtacgt agcacnagca gctccctcgc tgcgatctat 120
tgaaaggtcg ac 132

<210> 804
<211> 703
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 542, 663, 681
<223> n = A,T,C or G

<400> 804
cctttttttt tttttttttt gaaattcaag taactttatt taaattcaaa aacaattctt 60
aaaactgcat ttagagtcaa gaccctttttg tattataaaa atcacaagta tttctaagag 120
acaaaaatac ttctaggtta actagaccag atctgacttt ggactttatt ctttaaacaa 180
attgcagaga atagagaaaa aaataggtta tttacagaaa acaatatcta catatgtact 240
tagaggtaca aatttggtga cagaaaagat tcagtatatg ctggcatctt agaagcagtt 300
ctcaaagagc ttagttttat tttcttgaat tttaagaatg cctaagatcc ttcttcatcc 360
tcgatcttgg gagccaagta gtattttaag tgtcccatat ccgcaatttt atactctaca 420
acaaggggta catctgcaga catactgagt gtcaccgttg aagagagtgg agtggctttt 480
gtaaagaagt tcaggtacct cagtgcaaaa gttagttgaa ctggttcatt catctctatg 540
gnaacagctt cctcctcttt atcgacatta cttgtctgtg acaatttaat gtttccattt 600
ccaagttctc cacttgcaga aaatttcact ccgtcttttg cacaggaaat tcaacagcat 660
ctncaatatg gtgagactcg natatacgtg caaatcccag aag 703

<210> 805
<211> 549
<212> DNA
<213> Homo sapiens

<400> 805
aactcaaatc aatagatcca gaagaagtag aatcgcgtga ataaaagatt ttattcagtt 60
tccagaaaga ggggggaatg aaagacccca ccataaggct tagcaagcta gctgcagtaa 120
cgccattttg caaggcatga aaaagtacca gagctgagtt ctcaaaagtc acaagaaagt 180
ttagttaaag aataaggctg aacaaaactg ggacaggggc caaacaggat atctgtggtc 240
gagcacctgg gccccggctc agggccaaga acagatggta ctcagataaa gcgaaactag 300
caacagtttc tggaaagtcc cacctcagtt tcaagttccc caaaagaccg ggaaaaaccc 360
caagccttat ttaaactaac caatcagctc gcttctcgct tctgtaaccg cgctttttgc 420
tccccagccc tataaaaagg gtaaaaaccc cacactcggt gcgccagtca tccgatagac 480
tgagtcgccc gggtacccgt gttcccaata aagccttttg ctgtttgcat ccgaaaaaaa 540
aaaaaaaaa 549

<210> 806
<211> 756
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 248, 345, 439, 654, 660, 662, 681, 683, 686, 689, 695, 697,
741, 742
<223> n = A,T,C or G

<400> 806
cctttttttt tttttttttg tcagaaaagc cagttttttt ttatttgtaa agctctgcca 60
taaacttcta gcgtgtgcca atggtcacct gccacactcg caccaggttg tccgtgtagc 120
cagcaaacag agtctggcca tcagcagacc aggccaggga ggtgcactgg ggtggttctg 180
ccttgctgct ggtactgata acttcttgct tcagttcatc tacaatgatc tttccctcta 240
aatcccanat cttgatgctg gggcctgtgg cagcacacag ccagtagcgg ttagggctga 300

agcacagggc gttgatgatg tccccaccat ctagcgtgta aaggngtttg ccttcgttga 360
gatcccataa catggcctgg ccatccttgc ctccagaagc acagagggat ccatctggag 420
agacagtcac cgtgttcana tagcctgtgt ggccaatgtg gttggtcttc agcttgcagt 480
tagccaggtt ccataccttg accagcttgt cccagccaca ggagacgatg atagggttgc 540
tgctgttggg cgagaagcgg acacaagaca cccactctga gtggctctca tcctggacag 600
tgtatttgca cacacccagg ggattccata gctttgatgg gtttattttc gaanatccan 660
anacaaattt gcccggttgt nanaangana aaggncncac ttcagcacca ttctttggta 720
tgggccccaa aatcgccttc nngggggggg gccccc 756

<210> 807
<211> 827
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 696, 734, 738, 752, 765, 767, 768, 777, 801, 805
<223> n = A,T,C or G

<400> 807
gtcgacctcg gcaagttctc ccaggagaaa gccatgttca gttcgagcgc caagatcgtg 60
aagcccaatg gcgagaagcc ggacgagttc gagtccggca tctcccaggc tcttctggag 120
ctggagatga actcggacct caaggctcag ctcagggagc tgaatattac ggcagctaag 180
gaaattgaag ttggtggtgg tcggaaagct atcataatct ttgttcccgt tcctcaactg 240
aaatctttcc agaaaatcca agtccggcta gtacgcgaat tggagaaaaa gttcagtggg 300
aagcatgtcg tctttatcgc tcagaggaga attctgccta agccaactcg aaaaagccgt 360
acaaaaaata agcaaaagcg tcccaggagc cgtactctga cagctgtgca cgatgccatc 420
cttgaggact tggtcttccc aagcgaaatt gtgggcaaga gaatccgcgt caaactagat 480
ggcagccggc tcataaaggt tcatttggac aaagcacagc agaacaatgt ggaacacaag 540
gttgaaactt tttctggtgt ctataagaag ctcacgggca aggatgttaa ttttgaattc 600
ccagagtttc aattgtaaac aaaaatgact aaataaaaag tatatattca cagtaaannn 660
nnnnnnnnnn nnnnnnnnnn nnnngggggg tcgacncggg ccccactgtg ctgggatttt 720
ttgcaagaat tccnccccncc ctgggactta gngggatccc gagcntnngg acccaanctt 780
taaagttttt aaaacccttt ncccnagctt tgggggtctt ccctttt 827

<210> 808
<211> 746
<212> DNA
<213> Homo sapiens

<400> 808
cctggtgtcg ccatgggccg ccgccccgcc cgttgttacc ggtattgtaa gaacaagccg 60
tacccaaagt ctcgcttctg ccgaggtgtc cctgatgcca agattcgcat tttgacctg 120
gggcggaaaa aggcaaaagt ggatgagttt ccgctttgtg gccacatggt gtcagatgaa 180
tatgagcagc tgtcctctga agccctggag gctgcccgaa tttgtgccaa taagtacatg 240
gtaaaaagtt gtggcaaaga tggcttccat atccgggtgc ggctccaccc cttccacgtc 300
atccgcatca acaagatgtt gtcctgtgct ggggctgaca ggctccaaac aggcatgcga 360
ggtgcctttg gaaagcccca gggcactgtg gccagggttc acattggcca agttatcatg 420
tccatccgca ccaagctgca gaacaaggag catgtgattg aggccctgcg cagggccaag 480
ttcaagtttc ctggccgcca gaagatccac atctcaaaga agtggggctt caccaagttc 540
aatgctgatg aatttgaaga catggtggct gaaaagcggc tcatcccaga tggctgtggg 600
gtcaagtaca tccccagtcg tggccctctg gacaagtggc gggccctgca ctcatgaagg 660
gcttccaatg tgcttgcccc cctctttaat actcaccaaa taaattctac tttcttgtcc 720
aaaaaaaaaa aaaaaaaggg cgggcc 746

<210> 809
<211> 768
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 264, 295, 329, 336, 342, 481, 540, 562, 647, 653, 699, 707, 728, 735
<223> n = A,T,C or G

<400> 809
gtcgacaagc gccttacgaa aggcggcaaa aagggagcca agaagaaagt ggttgatcca 60
ttttctaaga aagattggta tgatgtgaaa gcacctgcta tgttcaatat aagaaatatt 120
ggaaagacgc tcgtcaccag gacccaagga accaaaattg catctgatgg tctcaagggt 180
cgtgtgtttg aagtgagtct tgctgatttg cagaatgatg aagttgcatt tagaaaattc 240
aagctgatta ctgaagatgt tcanggtaaa aactgcctga ctaacttcca tggcntggat 300
cttacccgtg acaaaatgtg ttccatggnc aaaaantggc anacaatgat tgaactcacg 360
ttgatgtcaa gactaccgat ggttacttgc ttcgtctggt tctgtgttgg ttttactaaa 420
aaacgcaaca atcagatacg gaagacctct tatgctcagc acccacaggt cccgccaaat 480
nccggaagaa gatgatggaa atcatgaccc gagagggtgc agacaaatga cttgaaagan 540
gtggtcaata aattgattcc anacagcatt ggaaaaacat agaaaaggct tgccatctat 600
tatcctctcc atgatgtctt cgttagaaaa gtaaaattct tgaaaanccc aantttgaat 660
gggaaagctc atggacttca tggggaaggc agtaagttnt ggaaaanccc ttggggacaa 720
aaacaggnct taaanttgac ccagcttgat ggatttgaac cccccgt 768

<210> 810
<211> 614
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 613, 614
<223> n = A,T,C or G

<400> 810
gtcgaccgaa gacttattcg actcattaat gaggaaacca gcagatagta aacctggttc 60
aaagtacaat tcaagaaact gagtatttat gggcattgaa gaaaaaatgt tgagataaaa 120
ttgctgtgca gaaaaaagtg ttaatgaagc cgacctgact acttaacctt agagacctgc 180
tttacaaggt tggcccttga ttggcatctg ggaacttgga gttcaggggg cttccaccat 240
tcccagaact gatcaaagta gcttactata tctaaactgt aaaacaatat agtttctcct 300
gaacacctgc tttccttctg ggagtctgga attttggtat gtgccaggca gagactacct 360
ttgtgaccag ctcccagtaa aaaccccagg cactcagtct ctaacaagct tttctggttg 420
acagtgtttc acaagtgctg ttacaactgg ttgctgggag aattaagctc atcctctgtg 480
attccactgg cggaggattc ttggaagctt gcacttagtt tcccctgact tcaccccatg 540
tgtctttttt cctttgctga ttttgttttg tatcctttca ctgtaataaa tcatggccgt 600
gagcagaact gtnn 614

<210> 811
<211> 131
<212> DNA
<213> Homo sapiens

<400> 811
cccctcgccc gtcacgcacc gcacgttcgt ggggaacctg gcgctaaacc attcgtagac 60
gacctgcttc tgggtcgggg tttcgtacgt agcagagcag ctccctcgct gcgatctatt 120
gaaaggtcga c 131

<210> 812
<211> 365
<212> DNA
<213> Homo sapiens

<400> 812
cgccgagtcg cgcggaggcg gaggcttggg tgcgttcaag attcaacttc acccgtaacc 60

caccgccatg gccgaggaag gcattgctgc tggaggtgta atggacgtta atactgcttt 120
acaagaggtt ctgaagactg ccctcatcca cgatggccta gcacgtggaa ttcgcgaagc 180
tgccaaagcc ttagacaagc gccaagccca tctttgtgtg cttgcatcca actgtgatga 240
gcctatgtat gtcaagttgg tggaggccct ttgtgctgaa caccaaatca acctaattaa 300
ggttgatgac aacaagaaac taggagaatg ggtaggcctt tgtaaaattg acagagaggg 360
gaaac 365

<210> 813
<211> 711
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 678, 707
<223> n = A,T,C or G

<400> 813
gtcgacctga cccgcaccat ggcggttggc aagaacaagc gccttacgaa aggcggcaaa 60
aagggagcca agaagaaagt ggttgatcca ttttctaaga aagattggta tgatgtgaaa 120
gcacctgcta tgttcaatat aagaaatatt ggaaagacgc tcgtcaccag gacccaagga 180
accaaaattg catctgatgg tctcaagggt cgtgtgtttg aagtgagtct tgctgatttg 240
cagaatgatg aagttgcatt tagaaaattc aagctgatta ctgaagatgt tcagggtaaa 300
aactgcctga ctaacttcca tggcatggat cttacccgtg acaaaatgtg ttccatggtc 360
aaaaaatggc agacaatgat tgaagctcac gttgatgtca agactaccga tggttacttg 420
cttcgtctgt tctgtgttgg ttttactaaa aaacgcaaca atcagatacg gaagacctct 480
tatgctcagc accaacaggt ccgccaaatc cggaagaaga tgatggaaat catgacccga 540
gaggtgcaga caaatgactt gaaagaagtg gtcaataaat tgattccaga cagcattgga 600
aaagacatag aaaagcttgc ccaatctatt tatcctctcc atgatgtctt cgttagaaaa 660
gtaaaaatgc tgaaaaancc caagtttgaa ttgggaaact catgganctt c 711

<210> 814
<211> 624
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 6, 472, 478, 509, 520, 617, 619
<223> n = A,T,C or G

<400> 814
aatccnactg tttaattaaa acaaagcatc gcgaaggccc gcggcgggtg ttgacgcgat 60
gtgatttctg cccagtgctc tgaatgtcaa agtgaagaaa ttcaatgaag cgcgggtaaa 120
cggcgggagt aactatgact ctcttaaggt agccaaatgc ctcgtcatct aattagtgac 180
gcgcatgaat ggatgaacga gattcccact gtccctacct actatccagc gaaaccacag 240
ccaagggaac gggcttggcg gaatcagcgg ggaaagaaga ccctgttgag cttgactcta 300
gtctggcacg gtgaagagac atgagaggtg tagaataagt gggaggcccc cggcgccccc 360
ccggtgtccc cgcgaggggc ccggggcggg gtccgccggc cctgcgggcc gccggtgaaa 420
taccactact ctgatcgttt tttcactgac ccggtgaggc gggggggcga gncccgangg 480
gctctcgctt ctggcgccaa gcgcccggnc gcgcgccggn cggcgcgcac ccgctccggg 540
gacagtgcca ggtggggagt ttgactgggg cggtacacct gtcaaacggt aacgcaggtg 600
tcctaaggcg agctcangna ggac 624

<210> 815
<211> 632
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 58, 514, 515, 516, 518, 519, 520, 521, 522, 523, 524, 525,

526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537,
538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549,
574, 590, 600
<223> n = A,T,C or G

<400> 815
gtcgacccat catgaacgac accgtaacta tccgcactag aaagttcatg accaaccnac 60
tacttcagag gaaacaaatg gtcattgatg tccttcaccc cgggaaggcg acagtgccta 120
agacagaaat tcgggaaaaa ctagccaaaa tgtacaagac cacaccggat gtcatctttg 180
tatttggatt cagaactcat tttggtggtg gcaagacaac tggctttggc atgatttatg 240
attccctgga ttatgcaaag aaaaatgaac ccaaacatag acttgcaaga catggcctgt 300
atgagaagaa aaagacctca agaaagcaac gaaaggaacg caagaacaga atgaagaaag 360
tcagggggac tgcaaaggcc aatgttggtg ctggcaaaaa gaagtgagct ggagattgga 420
tcacagcccg aaggagtaaa ggtgctgcaa tgatgttagc tgtggccact gtggattttt 480
cgcaagaaca ttaataaact aaaaacttca aaannannn nnnnnnnnnn nnnnnnnnnn 540
nnnnnnnnng gggtcgaccc ggcccccccc ttgnggctgg gatttttgn agaaattccn 600
cccccccttgg aactaggggg gatcccaaac tt 632

<210> 816
<211> 741
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 516, 624, 717, 726
<223> n = A,T,C or G

<400> 816
cctttttttt tttttttagg atctgtaaac tacatttatt gaatacttac tggacacatc 60
atatacaaaa aaggatgggg gcaggtaaga acttgaagaa attaaatata cacattaagt 120
ttcttcacta attctagcca ctaaagaagt acaaaatttg tacaagtaat actttataat 180
gaaattttga tgcctgtcaa aagggtaata agctatacat atactacaat aaacattttt 240
aaaaactgtg cttaatatca tagaattttc ttaaaatggg ttggtaaaat acctatatag 300
catccattct tacacacata ttttccatta aagattgctt aaatagtaca aattcctatt 360
gctaagaaat tcatggtcaa cagctgtata tgaagttcct ctaagaaaca tcacagcatt 420
tgcagtaagt ccatttctcc agtgaagccc accttatttt cagtttagct tactaccaag 480
ttctcatgag aactgtttat atgtcttttg cttggncatc ttcttcaagt tttctgattt 540
catttttttaa acaatttata gtttcacgac ttgcttttaa tctctcctta agctctgcaa 600
tctcaaagct tggtttttc ttancagctt ctaatttttc tctgggtttc acttcaaagc 660
tctgcaaatt ctgtttcatg ccttataagc tcctaaagtt aactgaccaa aaggtgncaa 720
taaatnggtg catcattgct g 741

<210> 817
<211> 734
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 622, 719, 727
<223> n = A,T,C or G

<400> 817
accaaatggc ggatgacgcc ggtgcagcgg gggggcccgg gggccctggt ggccctggga 60
tggggaaccg cggtggcttc cgcggaggtt tcggcagtgg catccggggc cggggtcgcg 120
gccgtggacg gggccggggc cgaggccgcg gagctcgcgg aggcaaggcc gaggataagg 180
agtggatgcc cgtcaccaag ttgggccgct tggtcaagga catgaagatc aagtccctgg 240
aggagatcta tctcttctcc ctgcccatta aggaatcaga gatcattgat ttcttcctgg 300
gggcctctct caaggatgag gttttgaaga ttatgccagt gcagaagcag acccgtgccg 360
gccagcgcac caggttcaag gcatttgttg ctatcgggga ctacaatggc cacgtcggtc 420
tgggtgttaa gtgctccaag gaggtggcca ccgccatccg tggggccatc atcctggcca 480

agctctccat cgtccccgtg cgcagaggct actgggggaa caagatcggc aagccccaca 540
ctgtcccttg caaggtgaca ggccgctgcg gctctgtgct ggtacgcctc atccctgcac 600
ccaagggcac tggcatcgtc tncgcacctg tgcctaagaa gcttgcttca tgatgggctg 660
gtatcgatga cttgcttaca cctcaacccc cgggggctgc acttgcccac ccttgggcna 720
actttcncca aagg 734

<210> 818
<211> 751
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 665, 749
<223> n = A,T,C or G

<400> 818
gcgaggctgt tgtgctcccg gctctcgtgt ttcccctcct gagcgggtgg aggaggccca 60
agcggtgctg ggcgcgctcc cccttccttt ccctccggcg tcctctcccg gccctctcgc 120
gctgcactgt ctctccgacg caagactgtc ccggcccgga tatggctcgt ggacagcaga 180
aaattcagtc tcagcagaaa aatgccaaaa agcaagctgg acaaaagaag aaacaaggac 240
atgaccaaaa ggctgctgcc aaagctgcct taatatatac ctgcactgtc tgtaggacac 300
aaatgccaga ccctaagacc ttcaagcagc actttgagag caagcatcct aagactccac 360
ttcctccaga attagctgat gttcaggcat aaggttgttt acaggtgaat tcatgacacc 420
tttgactctt ctactgtctc agaccttagg taacatacct gcagctgctt ttctaacaaa 480
ctgttgatca gcaaaaataa aggggctaca gaaacactca ttttatgct gttccctctt 540
gggcttcatg caaagacaat tctgtgtaaa tgtacagttg actctgattt ggaaatatga 600
aaatcagtcc atccttgtta taaaaaattt ttttacaatt gtaattatat tgatgttcat 660
attgngtaaa ataactcatt taataaaata gtactttgat ttacgacatc aaaaaaaaaa 720
aaaaaaaaaa gggcgggccg cttcgagtnt a 751

<210> 819
<211> 756
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 745
<223> n = A,T,C or G

<400> 819
cctttttttt ttttttttcaa gtttagaata cctggtttat tgggaaaact tcataatgaa 60
aactacaatt agctttttcc acaacttaca aaataataat ctgatattta aaatgaattg 120
gttttcatta tgtaagtcga aatggtaaaa aatcataatg acctatccaa tgcatcatat 180
atatgctatt cagagaaact caaatccccg aattctcctg tggcatgttt tatatcagac 240
atttaaaatc tgtttaccaa gaaagaccag gattttaact atatgtaggt ttctgcttac 300
agttgcaaac tatcagaagc ctgtctatat gatagagccc agataaacct gagatttaga 360
aaagcaagtc atttattctc ctgaggctgt tttagtggca cttttgtgac aggaatgacc 420
ctcctaatgc tttactacac aacttaacca gatctatcag tcatgataaa ttagacccag 480
tccatctttc aatccagtct actctggttc tgaacatata aacacaaaac actacagatt 540
tattaatata gcattttccc acaccctaac cctataaaga actttaaaag agaaaatttc 600
atctaaatat ttcacactta aaggaaagcc ttaccaacta tggcaacagg tttggaccat 660
gaaatagtac tttcctagat gacatatcga gtcaacatga agccttagct gaaatgaatg 720
attcaggata ttaatgagga aattntccca aatgat 756

<210> 820
<211> 751
<212> DNA
<213> Homo sapiens

<220>

<221> misc_feature
<222> 119, 188, 232, 278, 474, 623, 631, 670
<223> n = A,T,C or G

<400> 820
tttttttttt tttttttttt tctagtaaaa ttattttatt tagttgtaat atccatctct 60
aattgtttga aataaaaatt tccatggtct taattgaact gtatgttact ttcttttana 120
atatcctttt tttcattaaa ataatttcta aaccactcta tgtgttcaac cttctgttta 180
acactaanat atgggttttt ggaaaggcca caagtcacca gctccatgaa gnggcgaatt 240
ggtccttgtt ttggaaagct ctccaggtgt ttctccanaa atatatgttc atgaaattct 300
gaaccatcat catcaaaacc tgcttcattg ttaattggga actcccatag tttcccctct 360
tttgtccact ggatcagctc ttcaaatcca ttctgaaggg gttgttcatt tactgtggct 420
aactgcttag caaattccac atcccaaagt gaaggtgatg tgtctgtttc aggngcttct 480
ttagtaactg ccatcatgtc aaaaatatta agtcttttcc ctgtgaatat atttttcctt 540
tttttaagat catccgtctt ctcctggcca ggataattgt catagccttc atcaaactga 600
atccgaagct ctggtcttga acnaactcta nctgtagcag atctggcaac tttcatatct 660
gatattatgn tactgaaact aattttaggg ccgctttgca tctctctgtg cccttggact 720
cttccccatg ctgctgggag ctgggctcaa c 751

<210> 821
<211> 756
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 668, 707, 711
<223> n = A,T,C or G

<400> 821
cctttttttt tttttttggg atatgacctt tattgaactt atccaccaga gtggaaataa 60
tgtctgtaca aaaccaaatg tttgttacta taacttctgc atcacaatta aaatccaaac 120
agttttttaa aaacagtcaa ctcaatcaaa acccactact tcagaatcaa tagcttcttt 180
gaagccacag taacacttaa atatggttaa gactcgaatg cagaaatttg gttggttgga 240
aagctaatta aacttccaac ttgctcaaat agaattacaa aaaggcaaaa ttgtgttttt 300
cacagagata cagtccactg gaatcaccaa cactggacag ctgttagagt atttagagtc 360
ctgagataac aaggaatcca ggcatccttt agacagtctt ctgttgtcct ttcttcccaa 420
tcagagattt gtggatgtgt ggaatgacac caccaccagc aattgtagcc ttgatgagag 480
aatccaattc ttcatctcca cgaatagcaa gttgcaagtg acgaggggta atacgcttta 540
cctttaagtc ttttgatgca tttcctgcca gttcaagtac ctctgcggtg aggtactcca 600
ggatggctgc gctgtacaca gcggcagtcg cgcccacacc gtccatgact ggtcgtccta 660
gattttangt gtcgatgaat accggccact gggaactgca agccggntct ntgcgagcgg 720
gaaaccgctt tgtcttgggc ttttcggagt cctttc 756

<210> 822
<211> 135
<212> DNA
<213> Homo sapiens

<400> 822
acaagggttt gactttcaat agatcgcagc gagggagctg ctctgctacg tacgaaaccc 60
cgacccagaa gcaggtcgtc tacgaatggt ttagcgccag gttccccacg aacgtgcggt 120
gcgtgacggg cgagg 135

<210> 823
<211> 123
<212> DNA
<213> Homo sapiens

<400> 823
ctttcaatag atcgcagcga gggagctgct ctgctacgta cgaaaccccg acccagaagc 60
aggtcgtcta cgaatggttt agcgccaggt tccccacgaa cgtgcggtgc gtgacgggcg 120

agg 123

<210> 824
<211> 115
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 23, 43, 61, 77, 83
<223> n = A,T,C or G

<400> 824
tcgacctttc aatagatcgc agngagggag ctgctctgct acntacgaaa ccccgaccca 60
naagcaggtc gtctacnaat ggnttagcgc caggttcccc acgaacgtgc ggagc 115

<210> 825
<211> 759
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 36, 207, 455, 677, 719, 736
<223> n = A,T,C or G

<400> 825
cctttttttt tttttttttt tttgccttta taaganaatt tttattgtta attatttacc 60
ttaatagttt cagaaagagg aacaaattag ctcagtccaa catgattggc agttggcata 120
ttctagtgaa gcaagtgttc tgactgctaa ggatttaatt tggataattt taatacttag 180
ccatctaaca cttcaagcat aacccanaat aaatgcatca ccttcccttt cactttaata 240
ccgcacctac ctcacttcga tatagaaata tcattcaata tgatttccag aaggacaagt 300
ttcctggaga atacaggcat gaggacaatg cacaaaaaga aaaactcaaa ataaaactct 360
gtatgataat ttactagtct aaggaaacaa aaccttccaa tatattaaga aataaatcca 420
gttacaaatg cactaatagg tctatgtgaa gaggntctgg tataataact gaaaatggct 480
ggctatttac aagatacaca agcagttacg gtgcacctag cccagcaatg gccctcagaa 540
gccaaaagtg ttctctccgc tgtaggccac atataagaat ccatcttcat ctttttcctt 600
ctcgtaaagc tgtcccatag ttaggctgga ctgtgggact gtcttatcca caaacaggaa 660
gatcgccttt tcagaangaa gctggatcct tttcctgatg atccacatga actgagccnc 720
agtgatatca gatggnaccc agtccttccg ttggcaatg 759

<210> 826
<211> 423
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 422, 423
<223> n = A,T,C or G

<400> 826
gtcgaccgcc tccctaccgc tccaagccca gccctcagcc atggcatgcc ccctggatca 60
ggccattggc ctcctcgtgg ccatcttcca caagtactcc ggcagggagg gtgacaagca 120
caccctgagc aagaaggagc tgaaggagct gatccagaag gagctcacca ttggctcgaa 180
gctgcaggat gctgaaattg caaggctgat ggaagacttg gaccggaaca aggaccagga 240
ggtgaacttc caggagtatg tcaccttcct gggggccttg gctttgatct acaatgaagc 300
cctcaagggc tgaaaataaa tagggaagat ggagacaccc tctgggggtc ctctctgagt 360
caaatccagt ggtgggtaat tgtacaataa attttttttg gtcaaattta aaaaaaaaaa 420
ann 423

<210> 827

<211> 123
<212> DNA
<213> Homo sapiens

<400> 827
ctttcaatag atcgcagtga gggagctgct ctgctacgta cgaaaccccg acccagaagc 60
aggtcgtcta cgaatggttt agcgccaggt tccccacgaa cgtgcggtgc gtgacgggcg 120
agg 123

<210> 828
<211> 520
<212> DNA
<213> Homo sapiens

<400> 828
cgcgtgtgtg cgcctaatct caggtggtcc acccgagacc ccttgagcac caaccctagt 60
cccccgcgcg gccccttatt cgctccgaca agatgaaaga aacaatcatg aaccaggaaa 120
aactcgccaa actgcaggca caagtgcgca ttggtgggaa aggaactgct cgcagaaaga 180
agaaggtggt tcatagaaca gccacagcag atgacaaaaa acttcagttc tccttaaaga 240
agttaggggt aaacaatatc tctggtattg aagaggtgaa tatgtttaca aaccaaggaa 300
cagtgatcca ctttaacaac cctaaagttc aggcatctct ggcagcgaac actttcacca 360
ttacaggcca tgctgagaca aagcagctga cagaaatgct acccagcatc ttaaaccagc 420
ttggtgcgga tagtctgact agtttaagga gactggccga agctctgccc aaacaatctg 480
tggatggaaa agcaccactt gctactggag aggatgatga 520

<210> 829
<211> 502
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 2, 4, 240, 368, 378, 420, 486
<223> n = A,T,C or G

<400> 829
tngnacttta ggcatttatt gaaaacttat acatgccata taaacaaact aaactctttt 60
agctgctata ccaagtttcc ataaaactgt ctgctggttg gggaggctac agcctgacca 120
cattctttgc cattgcctac aaggggtaag aaatggcaca tggaaacatg gcaggccgac 180
tcacgaacac aggcctgggc cagcgctttc ttcttcctct tttattccca tcagtcctan 240
accagagagt gaaccatgag tgctcttggt tcctggcagc aggatgaggc agagagtgcc 300
cgggcacaag ctgttgtaga gctttccaat cttccggctc cagcgccagg ctgctatctt 360
cgggtggncc agtttcanag tctgcaaggc ctcctgttca aagggggggag gtacaacacn 420
aagccctggg agccttgttg attcaggtgg taagcctctg agccaggcat ggaggtgcct 480
gggggntagg gcatgcctgc ct 502

<210> 830
<211> 517
<212> DNA
<213> Homo sapiens

<400> 830
tgggtgtcct taggacccac tggaatatac attctacaaa gggtaggggg tttctgtttt 60
gttcagtgtc ttgtgttttc agtgtctgga atagcacata gcacacatag tagatattca 120
ataaacaatg gctgaataag taaatgaatt tttccaagtt ttatgataaa agaatgacca 180
aagttttttt tattgttact tcatgcaaag tgcagatgag ccaaaatagg aagactaggc 240
agagactggt ttaccccatg gatattatca tcatcatcat caatatattg ttgttgtcat 300
tatcagtttt atgctgagtt tatagataag gacagatctt acacttctca aacacagaaa 360
ctgcatttta ctcactctgt aggagattct aacaagctac agggcttatg tatattgaaa 420
cctaattgtt tgataaataa attaaacgaa ttataaatca tgattttcat aaacagacta 480
aagagtattc attcatgaag gtatggtctg gttactt 517

<210> 831
<211> 123
<212> DNA
<213> Homo sapiens

<400> 831
ctttcaatag atcgcagcga gggagctgct ctgctacgta cgaaaccccg acccagaagc 60
aggtcgtcta cgaatggttt agcgccaggt tccccacgaa cgtgcggtgc gtgacgggcg 120
agg 123

<210> 832
<211> 810
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 518, 575, 577, 600, 611, 626, 630, 637, 642, 658, 667, 707,
743, 781, 797
<223> n = A,T,C or G

<400> 832
gtcgaccgtg gctgtctcct ctctccgcca tggcgtgtgc tcgcccactg atatcggtgt 60
actccgaaaa gggggagtca tctggcaaaa atgtcacttt gcctgctgta ttcaaggctc 120
ctattcgacc agatattgtg aactttgttc acaccaactt gcgcaaaaac aacagacagc 180
cctatgctgt cagtgaatta gcaggtcatc agactagtgc tgagtcttgg ggtactggca 240
gagctgtggc tcgaattccc agagttcgag gtggtgggac tcaccgctct ggccagggtg 300
cttttggaaa catgtgtcgt ggaggccgaa tgtttgcacc aaccaaaacc tggcgccgtt 360
ggcatcgtag agtgaacaca acccaaaaac gatacgccat ctgttctgcc ctggctgcct 420
cagccctacc agcactggtc atgtctaaag gtcatcgtat tgaggaagtt cctgaacttc 480
ctttggtagt tgaagataaa gttgaaggct acaagaanac caaggaagct gttttgctcc 540
ttaagaaact taaagcctgg aatgatatca aaaangncta tgcctctcaa cgaatgagan 600
ctggcaaagg naaaatgaaa aaccgncgcn tattcancgc angggcccct gcattatnta 660
taatgangaa aatggggatt atcaagggct tcaaaaacat ccctggnaat actcttgctt 720
aatggaaaca acttaacatt ttnaaacttg cttcctgggg ggcatgtggg aacttttttg 780
natttggact ggaaaangct tttccggaaa 810

<210> 833
<211> 514
<212> DNA
<213> Homo sapiens

<400> 833
gcaaggcggc ggcaggagag gttgtggtgc tagtttctct aagccatcca gtgccatcct 60
cgtcgctgca gcgacacacg ctctcgccgc cgccatgact gagcagatga cccttcgtgg 120
caccctcaag ggccacaacg gctgggtaac ccagatcgct actaccccgc agttcccgga 180
catgatcctc tccgcctctc gagataagac catcatcatg tggaaactga ccagggatga 240
gaccaactat ggaattccac agcgtgctct gcggggtcac tcccactttg ttagtgatgt 300
ggttatctcc tcagatggcc agtttgccct ctcaggctcc tgggatggaa ccctgcgcct 360
ctgggatctc acaacgggca ccaccacgag gcgatttgtg ggccatacca aggatgtgct 420
gagtgtggcc ttctcctctg acaaccggca gattgtctct ggatctcgag ataaaaccat 480
caagctatgg aataccctgg gtgtgtgcaa atac 514

<210> 834
<211> 123
<212> DNA
<213> Homo sapiens

<400> 834
ctttcaatag atcgcagcga gggagctgct ctgctacgta cgaaaccccg acccagaagc 60
aggtcgtcta cgaatggttt agcgccaggt tccccacgaa cgtgcggtgc gtgacgggcg 120
agg 123

<210> 835
<211> 518
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 86, 143, 146
<223> n = A,T,C or G

<400> 835
cctttttttt tttttttttt ttgactgtcc taaattgttt attaagtatg aattttacaa 60
actttactta tattagcggt aacggnggag ctggagagta ttgcgccttc tccaagctgc 120
ccggcgagag ccaccaatag tgnggnggaa cttgtggccc tttccaaggc cacggctctt 180
tcggcctgca gatgtcagcc cacgcatctc cctgtgcttg tggactggtt tggtgatcca 240
ctgggtgtca ggatttcttc tgatagcttt atggaatgga tcaatgagga taacctcaaa 300
aaatttgtat gtggaatctt caccaaccca gtaagaattc aggactctca gagccccaca 360
gtggcgtcca gctcgctcct ctgcaacgga ctgaaggctt cgagcaaact ttagctggtt 420
aacaccatga tggacaggct tgccgtaagt tgcaccctta ggaactgggc gttttcggcc 480
accacggcga acacgaatcc tatatataac gtaacctt 518

<210> 836
<211> 639
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 47, 638, 639
<223> n = A,T,C or G

<400> 836
gcgcttcggg agccgcggct tatggtgcag acatggccaa gtccaanaac cacaccacac 60
acaaccagtc ccgaaaatgg cacagaaatg gtatcaagaa accccgatca caaagatacg 120
aatctcttaa gggggtggac cccaagttcc tgaggaacat gcgctttgcc aagaagcaca 180
acaaaaaggg cctaaagaag atgcaggcca acaatgccaa ggccatgagt gcacgtgccg 240
aggctatcaa ggccctcgta aagcccaagg aggttaagcc caagatccca aagggtgtca 300
gccgcaagct cgatcgactt gcctacattg cccaccccaa gcttgggaag cgtgctcgtg 360
cccgtattgc caaggggctc aggctgtgcc ggccaaaggc caaggccaag gccaaggcca 420
aggatcaaac caaggcccag gctgcagccc cagcttcagt tccagctcag gctcccaaac 480
gtacccaggc ccctacaaag gcttcagagt agatatctct gccaacatga ggacagaagg 540
actggtgcga ccccccaccc ccgcccctgg gctaccatct gcatggggct ggggtcctcc 600
tgtgctattt gtacaaataa acctgaggca ggaaaaann 639

<210> 837
<211> 487
<212> DNA
<213> Homo sapiens

<400> 837
gtggttgctg ccgaaatggg caagttcatg aaacctggga aggtggtgct tgtcctggct 60
ggacgctact ccggacgcaa agctgtcatc gtgaagaaca ttgatgatgg cacctcagat 120
cgcccctaca gccatgctct ggtggctgga attgaccgct acccccgcaa agtgacagct 180
gccatgggca agaagaagat cgccaagaga tcaaagataa aatcttttgt gaaagtgtat 240
aactacaatc acctaatgcc cacaaggtac tctgtggata tccccttgga caaaactgtc 300
gtcaataagg atgtcttcag agatcctgct cttaaacgca aggcccgacg ggaggccaag 360
gtcaagtttg aagagagata caagacaggc aagaacaagt ggttcttcca gaaactgcgg 420
ttttagatgc tttgttttga tcattaaaaa ttataaagaa aaaaaaaaaa aaaaaaaaaa 480
aaaaaaa 487

<210> 838

<211> 515
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 18, 19
<223> n = A,T,C or G

<400> 838
ggggacctgt taaacagnnc ctcaaaccac ccttatgggc cctctgatag tacttttatt 60
aatcctactc ctcggaccct gcattctcaa ccgcttggtc cagtttgtaa aagacagaat 120
ttcggtggtg caggccctgg ttctgaccca acagtatcac caactcaaat caatagatcc 180
agaagaagta gaatcgcgtg aataaaagat tttattcagt ttccagaaag aggggggaat 240
gaaagacccc accataaggc ttagcaagct agctgcagta acgccatttt gcaaggcatg 300
aaaaagtacc agagctgagt tctcaaaagt cacaaagaag tttagttaaa gaataaggct 360
gaacaaaact gggacagggg ccaaacagga tatctgtggt cgagcacctg ggccccggct 420
cagggccaag aacagatggt actcagataa agcgaaacta gcaacagttt ctggaaagtc 480
ccacctcagt ttcaagttcc ccaaaagacc gggac 515

<210> 839
<211> 512
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 42
<223> n = A,T,C or G

<400> 839
ggcgtagcag agtggtcgtt gtctttctag gtctcagccg gncgtcgcga cgttcgcccg 60
ctcgctctga ggctcctgaa gccgaaacca gctagacttt cctccttccc gcctgcctgt 120
agcggcgttg ttgccactcc gccaccatgt tcgaggcgcg cctggtccag ggctccatcc 180
tcaagaaggt gttggaggca ctcaaggacc tcatcaacga ggcctgctgg gatattagct 240
ccagcggtgt aaacctgcag agcatggact cgtcccacgt ctctttggtg cagctcaccc 300
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tcaccagtat gtccaaaata ctaaaatgcg ccggcaatga agatatcatt acactaaggg 420
ccgaagataa cgcggatacc ttggcgctag tatttgaagc accaaaccag gagaaagttt 480
cagactatga aatgaagttg atggatttag at 512

<210> 840
<211> 510
<212> DNA
<213> Homo sapiens

<400> 840
ctggaaggaa ctggtctgct cacacttgct ggcttgcgca tcaggactgg ctttatctcc 60
tgactcacgg tgcaaaggtg cactctgcga acgttaagtc cgtccccagc gcttggaatc 120
ctacggcccc cacagccgga tcccctcagc cttccaggtc ctcaactccc gcggacgctg 180
aacaatggcc tccatggggc tacaggtaat gggcatcgcg ctggccgtcc tgggctggct 240
ggccgtcatg ctgtgctgcg cgctgcccat gtggcgcgtg acggccttca tcggcagcaa 300
cattgtcacc tcgcagacca tctgggaggg cctatggatg aactgcgtgg tgcagagcac 360
cggccagatg cagtgcaagg tgtacgactc gctgctggca ctgccgcagg acctgcaggc 420
ggcccgcgcc ctcgtcatca tcagcatcat cgtggctgct ctgggcgtgc tgctgtccgt 480
ggtgggggc aagtgtacca actgcctgga 510

<210> 841
<211> 517
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 44, 490
<223> n = A,T,C or G

<400> 841
ccttttttttt ttttttttt aattaatact gaatttttta atgngcaaaa atctaactct 60
gcttttaaa gcaagtagaa ggagtgacaa tatggcacca ttccaataat caaacaccaa 120
taaaaatggc agcagtacaa caatctaagc aaatctcaaa tacaacatac ttgtaattag 180
aacacaatgc aatgacttga ttttagcaag aactagacac ttaatttggt aaaagaaacc 240
aaacaatgca ttatattgaa tactaagcta agttaccata attagtctta caaattctca 300
aatttcacaa ctacttttga acatctaaat ttaaacctaa attttttaat taaatgcctg 360
ttcaacaaag ctaattggaa caaacacatt tatgtaaatt tacattctag aataccaggg 420
taaacaagga gacgttattc aaagatgaat gagaaagttc tattcttttt catcatttgt 480
gtgatcaggn tgcaaaggac atgcttttct ctttgct 517

<210> 842
<211> 498
<212> DNA
<213> Homo sapiens

<400> 842
gttggcgact cccggacgta ggtagtttgt tgggccgggt tctgaggcct tgcttctctt 60
tacttttcca ctctaggcca cgatgccgca gtaccagacc tgggaggagt tcagccgcgc 120
tgccgagaag ctttacctcg ctgaccctat gaaggcacgt gtggttctca aatataggca 180
ttctgatggg aacttgtgtg ttaaagtaac agatgattta gtttgtttgg tgtataaaac 240
agaccaagct caagatgtaa agaagattga gaaattccac agtcaactaa tgcgacttat 300
ggtagccaag gaagcccgca atgttaccat ggaaactgag tgaatggttt gaaatgaaga 360
ctttgtcgtg tacttaggaa gtaaatatct tttgaattag agaaagtgtt gggacagaaa 420
gtactttatg taactaagtg ggctgttcag aagcttagag gtcatttttt gtaattttct 480
ttttaattac tttagagt 498

<210> 843
<211> 521
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 58, 515, 521
<223> n = A,T,C or G

<400> 843
gtcgacccat catgaacgac accgtaacta tccgcactag aaagttcatg accaaccnac 60
tacttcagag gaaacaaatg gtcattgatg tccttcaccc cgggaaggcg acagtgccta 120
agacagaaat tcgggaaaaa ctagccaaaa tgtacaagac cacaccggat gtcatctttg 180
tatttggatt cagaactcat tttggtggtg gcaagacaac tggctttggc atgatttatg 240
attccctgga ttatgcaaag aaaaatgaac ccaaacatag acttgcaaga catggcctgt 300
atgagaagaa aaagacctca agaaagcaac gaaaggaacg caagaacaga atgaagaaag 360
tcaggggggac tgcaaaggcc aatgttggtg ctggcaaaaa gaagtgagct ggagattgga 420
tcacagcccg aaggagtaaa ggtgctgcaa tgatgttagc tgtggccact gtggattttt 480
cgcaagaaca ttaataaact aaaaacttca aaaanaaaaa n 521

<210> 844
<211> 512
<212> DNA
<213> Homo sapiens

<400> 844
gggatctcac cgtgggtccg attagccttt tctctgcctt gcttgcttga gcttcagcgg 60
aattcgaaat ggctggcggt aaggctggaa aggactccgg aaaggccaag acaaaggcgg 120
tttcccgctc gcagagagcc ggcttgcagt tcccagtggg ccgtattcat cgacacctaa 180

aatctaggac gaccagtcat ggacgtgtgg gcgcgactgc cgctgtgtac agcgcagcca 240
tcctggagta cctcaccgca gaggtacttg aactggcagg aaatgcatca aaagacttaa 300
aggtaaagcg tattacccct cgtcacttgc aacttgctat tcgtggagat gaagaattgg 360
attctctcat caaggctaca attgctggtg gtggtgtcat tccacacatc cacaaatctc 420
tgattgggaa gaaaggacaa cagaagactg tctaaaggat gcctggattc cttgttatct 480
caggactcta aatactctaa cagctgtcca gc 512

<210> 845
<211> 517
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 24, 25, 517
<223> n = A,T,C or G

<400> 845
cctttttttt tttttttaaa caanntgttt atttaaacaa caagacgctt gacttgaagg 60
gaaaactatc taggattctt ttttgtttta gagtaattta tccctactta aagacagatt 120
gccctacatg taacagctac gtacaaaaaa gttataaaat tgtccttggt tttacaatga 180
taaatgaaaa acattaaaat tctccaattg aacaaggtat gcaaggattt ttatgttgtt 240
gttttttttt ttgttaaaac agtgagagca aaataactta ctggaatata aagataagag 300
ctgaatgagc atgccactaa tggagaaagg gggtattttc acagaatcag tatttttccc 360
catcccgtct ccacttgatg tcaatcaaaa cataccattg gctgtttagt taaaaaaaaa 420
atgcaatatg cttgtgcaca tataccagtt actttatgta caataaagga atggggaagg 480
gggaaatgaa agaatagaga aaactatacg gtagtan 517

<210> 846
<211> 772
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 656, 672, 695, 738, 749
<223> n = A,T,C or G

<400> 846
gtcgaccgcg acgttcgccc gctcgctctg aggctcctga agccgaaacc agctagactt 60
tcctccttcc cgcctgcctg tagcggcgtt gttgccactc cgccaccatg ttcgaggcgc 120
gcctggtcca gggctccatc ctcaagaagg tgttggaggc actcaaggac ctcatcaacg 180
aggcctgctg ggatattagc tccagcggtg taaacctgca gagcatggac tcgtcccacg 240
tctctttggt gcagctcacc ctgcggtctg agggcttcga cacctaccgc tgcgaccgca 300
acctggccat gggcgtgaac ctcaccagta tgtccaaaat actaaaatgc gccggcaatg 360
aagatatcat tacactaagg gccgaagata acgcggatac cttggcgcta gtatttgaag 420
caccaaacca ggagaaagtt tcagactatg aaatgaagtt gatggattta gatgttgaac 480
aacttggaat tccagaacag gagtacaagc ttgtgtagta aagatgcctt ctggtgaatt 540
tgcacgtata tgccgagatc tcagccatat tggagatgct gttgtaattt cctgtgcaaa 600
agacggagtg aaattttctg caagtggaga acttggaaat ggaaacatta aattgncaca 660
gacaagtaat gncgataaag aggaggaagc tgttnccata gagatgaatg accagttcac 720
taacttttgc cttgaggnac cctgacttnt ttacaaaagc ccttccactt tt 772

<210> 847
<211> 1012
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 501, 554, 567, 605, 611, 620, 625, 640, 652, 664, 671, 674,
680, 707, 718, 735, 739, 755, 768, 770, 784, 794, 805, 827,

830, 837, 844, 858, 865, 880, 892, 920, 922, 931, 942, 950,
951, 954, 955, 959, 1002, 1006
<223> n = A,T,C or G

<400> 847
cctttttttt tttttttgat gtttgaaatt caagtaactt tatttaaatt caaaaacaat 60
tcttaaaact gcatttagag tcaagaccct tttgtattat aaaaatcaca agtatttcta 120
agagacaaaa atacttctag gttaactaga ccagatctga ctttggactt tattctttaa 180
acaaattgca gagaatagag aaaaaaatag gttatttaca gaaaacaata tctacatatg 240
tacttagagg tacaaatttg gtgacagaaa agacttcagt atatgctggc atcttagaag 300
cagttctcaa agagcttagt tttattttct tgaattttaa gaatgcctaa gatccttctt 360
catcctcgat cttgggagcc aagtagtatt ttaagtgtcc catatcccgc aattttatac 420
tctacaacaa gggggtacat ctggcagaca tactggagtg tccccgttga aagaaaagtg 480
gaagtgggct tttggtaaaa naagttcagg gtaccctcag tggcaaaaag gttaagtttg 540
gaacctgggt tcanttcatt ctctatnggg aaacaggctt tccctccctc ttttattccg 600
accanttaac nttgggcctn ggggnacaaa attttaaaan gggttttccc anttttttccc 660
caanggtttc nttnccccccn tttgggcagg aaaaaaaaat ttttccncct ttcccggncc 720
ttttttttgg gccanccang gggaaaaaat ttttncccaa acccgggncn tttttttttc 780
cccnaaataa tttnggggct ttggnaaaaa aaaacctttc cgggggnaan taaattnacc 840
ccgngggccc caaaaaantt ttccnccccc ccaaaaaaan gggggcaaat tnttttttt 900
aacctttaac cccccaaaan gnttgggga nccccccccc cnggggtttn nttnngggna 960
aaaattttcc ccaaaaggtt tggggttttc caaacccatt tntttnaaaa aa 1012

<210> 848
<211> 730
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 498, 519, 522, 574, 578, 581, 596, 623, 648, 655, 695, 722
<223> n = A,T,C or G

<400> 848
agcgcaagta ggtctacaag acgctacttc ccctatcata gaagagctta tcacctttca 60
tgatcacgcc ctcataatca ttttccttat ctgcttccta gtcctgtatg ccctttttcct 120
aacactcaca acaaaactaa ctaatactaa catctcagac gctcaggaaa tagaaaccgt 180
ctgaactatc ctgcccgcca tcatcctagt cctcatcgcc ctcccatccc tacgcatcct 240
ttacataaca gacgaggtca acgatccctc ccttaccatc aaatcaattg gccaccaatg 300
gtactgaacc tacgaagtac accgactacg gcgggactaa tcttcaactc ctacatactt 360
ccccattatt cctagaacca gggcgacctg cgactccttg acgttgacaa tcgagtagta 420
ctcccgattg aagcccccat tcgtataata attacatcac aagacgtctt gcactcatga 480
gctggcccca cattaggntt aaaaaacagg atgcaattnc cnggacgtct aaaccaaacc 540
acttttaccg ctacacgaac cgggggatac tacnggcnat ngctctggaa atctgnggag 600
caaaccacag tttcatgccc cantggtcct aaaaattaaa ttcccctnaa aaatntttga 660
aaataggggg cccggaattt acccccttata gggancccccc ttttaccccc ctttttggag 720
gnccaaaaaa 730

<210> 849
<211> 513
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 75, 223, 289, 335, 380, 418, 424, 446, 451, 458, 511
<223> n = A,T,C or G

<400> 849
gttcgatcgg acggcgccct tttttttttt tttttttccag ttctacacac atttctattt 60
tattatggaa aaggnggaaa cgccaccttc tccacaacag caaccagtaa aatttatccc 120
aaaaataact cggtacaaaa caggtctgtt tcagaattaa aaaaaaaaaa agaaaaaaaa 180

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aacctttaca tgagttttta aatcctattt taaaacataa aanaaacaaa tccatcattg 240
gccgcacagc cccagccacc gcccccccaac cagggagcaa gaggagacnc ctgggtcctg 300
ttccgcacgc ggatttgctg gtctgtttaa ctggngtcca ttctcgcatt ataggcgtcc 360
agctgggcat ccagctcctn tgccgaaagc tgctgctttg aattcctgcc ggcacctntg 420
cctnttccac gggcgcctcc gcgggngcct ntccgggngc ctccaccacc accaaaacct 480
ccagcgccac ggtttctagt catgccacct ntg                              513

<210> 850
<211> 703
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 477, 526, 588, 622, 646, 662, 695
<223> n = A,T,C or G

<400> 850
ggcggtgggg cgcaggccgc cgcgcgagtg aatcgaggcg gcgggcccat ccggaaccgg 60
ccggccatcg cccgcggcgc ggccggcgga ggcggcagga accgaccggc gccctacagc 120
aggccaaaac aacttcccga caagtggcag cacgatcttt tcgacagtgg cttcggcggt 180
ggtgccggcg tggagacagg tgggaaactg ctggtgtcca atctggattt tggagtctca 240
gacgccgata ttcaggaact ctttgctgaa tttggaacgc tgaagaaggc ggctgtgcac 300
tatgatcgct ctggtcgcag cttaggaaca gcagacgtgc actttgagcg gaaggcagat 360
gccctgaagg ccatgaagca gtacaacggc gtccctctgg atggccgccc atgaacattc 420
agcttgtcac gtcacagatt gacgcacagc ggaggcctgc acagagcgta aacagangtg 480
gcatgactag aaaccgtggc gctggaaggt tttggtggtg gtggangcac ccggagaggc 540
accccccgcgg aggccccccg ttggaaaaag gcaaaaggtg cccggcangg aaattcaaaa 600
gcaccagctt tttcggcaaa angaacttgg atgcccaact tggacncctt attaatggcg 660
anaaaatggg cccccagttt taaaccagaa ccaancaaat tcc                   703

<210> 851
<211> 792
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 22, 75, 90, 145, 236, 286, 328, 356, 424, 443, 448, 453,
454, 462, 489, 511, 512, 524, 525, 529, 538, 539, 546, 551,
565, 567, 577, 586, 603, 605, 617, 620, 625, 636, 639, 659,
660, 666, 683, 691, 699, 705, 711, 729, 732, 746, 750
<223> n = A,T,C or G

<400> 851
gttcgatcgg acggcgccct tnttttttttt tttttttccag ttctacacac atttctattt 60
tattatggaa aaggnggaaa cgccaccttn tccacaacag caaccagtaa aatttatccc 120
aaaaataact cggtacaaaa caggnctgtt tcagaattaa aaaaaaaaaa agaaaaaaaa 180
aacctttaca tgagttttta aatcctattt taaaacataa aagaaacaaa tccatnattg 240
gccgcacagc cccagccacc gcccccccaac cagggagcaa gagganacgc ctgggtcctg 300
ttccgcacgc ggatttgctg gtctgttnaa ctggggtcca ttctcgcatt ataggngtcc 360
agctgggcat ccagctcctc tgccgaaagc tgctgctttg aattcctgcc ggcacctctg 420
cctnttccac gggcgcctcc cgnggggngg ccnntccggg gngcctccca cccacccacc 480
caaaaaccnt tcccagcggg cccaccgggg nntttcctta aggnncaant ggcccccnnc 540
cctttnttgg nttttttaac ccccncnttt tttgggnggg caaagngggg gccctttttcc 600
ccncnatttt gggggggngcn gggtntccaa aaaaanttnt tttgggtggg aaaaccccnn 660
tggggnaaaa caaaaaaggg gcnttttggg naaaaaaang gggtntttcc naaattgggg 720
gggggggggnc cngggggccc cccaantttn ccccaaaaaa agggggggaa accccccccc 780
ggtttgggga aa                                                     792

<210> 852
<211> 516
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<212> DNA
<213> Homo sapiens

<400> 852
gtcgactcct gtgaggtatg gtgctgggtg cagatgcagt gtggctctgg atagcacctt 60
atggacagtt gtgtccccaa ggaaggatga gaatagctac tgaagtccta aagagcaagc 120
ctaactcaag ccattggcac acaggcatta gacagaaagc tggaagttga aatggtggag 180
tccaacttgc ctggaccagc ttaatggttc tgctcctggt aacgttttta tccatggatg 240
acttgcttgg gtaaggacat gaagacagtt cctgtcatac cttttaaagg tatggagagt 300
cggcttgact acactgtgtg gagcaagttt taaagaagca aaggactcag aattcatgat 360
tgaagaaatg caggcagacc tgttatccta aactagggtt tttaatgacc acaacaagca 420
agcatgcagc ttactgcttg aaagggtctt gcctcaccca agctagagtg cagtggcctt 480
tgaagcttac tacagcctca aacttctggg ctcaac 516

<210> 853
<211> 425
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 235, 339, 365, 372, 403, 411
<223> n = A,T,C or G

<400> 853
cctttttttt ttttttttcc ggtatccact ggaagtttat ttctttaggg ttctatccca 60
accagtcgct taaaaaccaa gtaacacaga cctgaggggt gggggctggg gactgcacct 120
ccctcctact catggtggac agcagtgggg actagggagg ggcaggagag gtggctgaag 180
caaggcagca gtaatggggc cacgacgcca cagagccagc tccgtcctct cccanaccct 240
ggtgggagtc cctgtggctt ggggtgggga gtgggggacc caccccaggc cctccctctc 300
ccttcctcag acagcctcct ttcgggctca acccatttnt tccggcagga gactgaggca 360
cacanagagg angaagtggg agaggaggac gagggagggg canggtggca ncacaaatga 420
aggca 425

<210> 854
<211> 757
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 552, 575, 689, 737, 739
<223> n = A,T,C or G

<400> 854
gcggagcgga gatcctcaaa cggcctagtg cttcgcgctt ccggagaaaa tcagcggtct 60
aattaattcc tctggtttgt tgaagcagtt accaagaatc ttcaaccctt tcccacaaaa 120
gctaattgag tacacgttcc tgttgagtac acgttcctgt tgatttacaa aaggtgcagg 180
tatgagcagg tctgaagact aacattttgt gaagttgtaa aacagaaaac ctgttagaaa 240
tgtggtggtt tcagcaaggc ctcagtttcc ttccttcagc ccttgtaatt tggacatctg 300
ctgctttcat attttcatac attactgcag taacactcca ccatatagac ccggctttac 360
cttatatcag tgacactggt acagtagctc cagaaaaatg cttatttggg gcaatgctaa 420
atattgcggc agttttatgc attgctacca tttatgttcg ttataagcaa gttcatgctc 480
tgagtcctga agagaacgtt atcatcaaat taaacaaggc tggccttgta cttggaatac 540
tgagttgttt angactttct attgtggcaa acttncagaa aacaaccctt tttgctgcac 600
atgtaagtgg agctgtgctt acctttggta tgggctcatt atatatgttt gttcagacca 660
tcctttccta ccaaatgcag cccaaaatnc atggcaaaca agtcttctgg atcagactgt 720
tggttggtta tcttggngng ggagtaaagt gccctta 757

<210> 855
<211> 127
<212> DNA

<213> Homo sapiens

<220>
<221> misc_feature
<222> 1, 2
<223> n = A,T,C or G

<400> 855
nnacctttca atagatcgca gcgagggagc tgctctgcta cgtacgaaac cccgacccag 60
aagcaggtcg tctacgaatg gtttagcgcc aggttcccca cgaacgtgcg gtgcgtgacg 120
ggcgagg 127

<210> 856
<211> 777
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 216, 299, 339, 413, 434, 482, 513, 537, 541, 567, 577, 581,
593, 597, 620, 625, 629, 633, 659, 660, 705, 710, 714, 717,
721, 724, 725, 764, 772
<223> n = A,T,C or G

<400> 856
cctttttttt tttttttaat ctttcaatct tttatttaaa tgccatgatc caggatggat 60
tttagatctt gttgaaagca gccacatcca tggactgcac atagtcctca aaagcagtga 120
tctgctcctc cagcatatct gttccaactt tatcatcttc aactacacac tgtatttgaa 180
gtttcttaat tccgtatccc actggaacta gtttanatga gccccagact aagccgtctg 240
cttgaatgct tctgacgcac tcctctaatt tcgccatatc tgtctcatca tcccaaggnt 300
tcacatctag taagatggaa gacttggcaa caagtgcang ttttttggct ttctttgatt 360
catattgtgc aagacgttct tcccttagcc tctttgcttc ttcctttcct ccncatcatc 420
agatccaaag aggncaatgt catcatcatc tttactatct gtagctccac ttcctgtagt 480
gncttccaca tcgggcagga ccatatttgc ccnaagcttt cttcactcct ggcaggntgg 540
ncttttcctt ttcgtaagac ttgatgngat tataccnacc ntagggcatg acncaantcg 600
gcaggcgggg gggctggacn ccggntttna aanacttgcc ccatctggct tgtgatggnn 660
ccatacccccc cccatgggaa cttctttgtc cccccccggg taatnccttn gganancccc 720
nggnnaggcc cggccaaggg gctttttttca ggggtttccc aaanccccac tnggggg 777

<210> 857
<211> 309
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 308, 309
<223> n = A,T,C or G

<400> 857
ataattatat acatattata tgtgtatatg gttatataat tatatacaca tattatatgt 60
gtatataatt atataattgt atacacatat tatatgtgta tatggttata taattatata 120
catatattat atattataat atattatata ttatattata tattataata tgtatatata 180
aatataatat ataatataat ataatataat atatataata taatatataa ttatatataa 240
tatatattat atataaaata atatatatat attcagtttt tttttttgga gatggagtct 300
tgctctgnn 309

<210> 858
<211> 823
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 711, 766, 782, 811
<223> n = A,T,C or G

<400> 858
caggtcctca atgtaggacc ccgcgtcccc attgggccta atcccgtgat cactgaacag 60
ctaccccct cccaacccgt gcagatcatg ctccccaggc ctcctcatcc tcctccttca 120
ggcgcggcct ctatggtgcc tggggctccc ccgccttctc aacaacctgg gacgggggac 180
aggctgctaa acctagtaaa aggagcctat caagcactca acctcaccag tcccgacaga 240
acccaagagt gctggctgtg tctggtatcg ggaccccct actacgaagg ggttgccgtc 300
ctaggtacct actccaacca tacctctgcc ccagctaact gctccgtggc ctcccaacac 360
aagctgaccc tgtccgaagt gaccgggcag ggactctgcg taggagcagt tcccaaaacc 420
catcaggccc tgtgtaatac cacccagaag gcgagcgacg ggtcctacta tctggctgct 480
cccgccggga ccatctgggc ttgcaacacc gggctcactc cctgcctatc taccactgta 540
ctcaacctca ccaccgatta ctgtgtcctg gttgagctct ggccaaaggt gacctaccac 600
tcccctggtt atgtttatga ccagtttgag agaaaaacca aatataaaag agagccggtg 660
tcattaactc ttggccttgc tgttgggaag gacttactat gggcggcata ncttgcagga 720
gtaggaacag ggaatacagg cccctagtgg gcaccaaaac aatttngagc cagcttccag 780
gnaggcctta cattacagaa cctttggggg ncttaaaaaa aaa 823

<210> 859
<211> 752
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 626, 659, 660, 666, 692, 735, 737
<223> n = A,T,C or G

<400> 859
cgcggtgcga cgaaggagta ggtggtggga tctcaccgtg ggtccgatta gccttttctc 60
tgccttgctt gcttgagctt cagcggaatt cgaaatggct ggcggtaagg ctggaaagga 120
ctccggaaag gccaagacaa aggcggtttc ccgctcgcag agagccggct tgcagttccc 180
agtgggccgt attcatcgac acctaaaatc taggacgacc agtcatggac gtgtgggcgc 240
gactgccgct gtgtacagcg cagccatcct ggagtacctc accgcagagg tacttgaact 300
ggcaggaaat gcatcaaaag acttaaaggt aaagcgtatt acccctcgtc acttgcaact 360
tgctattcgt ggagatgaag aattggattc tctcatcaag gctacaattg ctggtggtgg 420
tgtcattcca cacatccaca aatctctgat tgggaagaaa ggacaacaga agactgtcta 480
aaggatgcct ggattccttg ttatctcagg actctaaata ctctaacagc tgtccagtgt 540
tggtgattcc agtggactgt atctctgtga aaaacacaat tttgcctttt tgtaattcta 600
tttgagcaag tttggaagtt taattngctt tccaaccaac caaaatttct gcatttccnn 660
tctttnaccc atattttaag ttgggtactg tnggcttttc aaaagaaact tatttggctt 720
tcttgtaaag taacngnggg tttttcaatt tg 752

<210> 860
<211> 729
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 88, 98, 145, 148, 193, 314, 353, 591, 662, 674, 679, 721,
729
<223> n = A,T,C or G

<400> 860
cctttttttt tttttttttt ttttgactgt cctaaattgt ttattaagta tgaattttac 60
aaactttact tatattagcg gtaacggngg agctgganag tattgcgcct tctccaagct 120
gcccggcgag agccaccaat agtgnggngg aacttgtggc cctttccaag gccacggctc 180
tttcggcctg canatgtcag cccacgcatc tccctgtgct tgtggactgg tttggtgatc 240

cactgggtgt caggatttct tctgatagct ttatggaatg gatcaatgag gataacctca 300
aaaaatttgt atgnggaatc ttcaccaacc cagtaagaat tcaggactct canagcccca 360
cagtggcgtc cagctcgctc ctctgcaacg gactgaaggc ttcgagcaaa ctttagctgg 420
ttaacaccat gatggacagg cttgccgtaa gttgcaccct taggaactgg gcgttttcgg 480
ccaccacggc gaacacgaat cctatatata acgtaacctt gcttggcctt gtagcccagt 540
cggcgcgctt tatcaggccg ggtggggcgg ggagccctgt ggagagcaga nagctggcgg 600
tactgccagc agcggaccct cagaagaaag cgcatgacat cagactgctt ctttctccat 660
anctcctgga tgtncttgna tgcacccatc ttggcttacc ttgatggctg gccgccaaac 720
ngaaagtcn 729

<210> 861
<211> 303
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 202
<223> n = A,T,C or G

<400> 861
tttttttttt tttttaatt actgcttgta gtggaggttg aggcgggaag atagtttaag 60
cccaagagtt taaggttaca gtgaactgtg atcacgacat tgcactccaa cttggataac 120
acagcaagac actgtctaaa aaaaaaaagt tatgtatgtg taatattttt ttgtatatat 180
tgtatttgcc caaatacaag gngatgcata cacaatcgaa cacttccaaa atgacttagc 240
aactatgtca tatatgaagt tagagaaaaa taatttataa aggaactata acactgttac 300
ttc 303

<210> 862
<211> 762
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 620, 658, 672, 688, 704, 743, 749
<223> n = A,T,C or G

<400> 862
tagtttctct aagccatcca gtgccatcct cgtcgctgca gcgacacacg ctctcgccgc 60
cgccatgact gagcagatga cccttcgtgg caccctcaag ggccacaacg gctgggtaac 120
ccagatcgct actaccccgc agttcccgga catgatcctc tccgcctctc gagataagac 180
catcatcatg tggaaactga ccagggatga gaccaactat ggaattccac agcgtgctct 240
gcggggtcac tcccactttg ttagtgatgt ggttatctcc tcagatggcc agtttgccct 300
ctcaggctcc tgggatggaa ccctgcgcct ctgggatctc acaacgggca ccaccacgag 360
gcgatttgtg ggccatacca aggatgtgct gagtgtggcc ttctcctctg acaaccggca 420
gattgtctct ggatctcgag ataaaaccat caagctatgg aataccctgg gtgtgtgcaa 480
atacactgtc caggatgaga gccactcaga gtgggtgtct tgtgtccgct tctcgcccaa 540
cagcagcaac cctatcatcg tctcctgtgg ctgggacaag ctggtcaagg tatggaacct 600
ggctaacttg caagctgaan accaaccaca ttggccacac aggctatctg aacacggnga 660
ctgtctctcc angatggatc cctctggngc tttttggagg caanggatgg cccagccctt 720
gtttatgggg gatcttcaaa ccnaaaggna aaacaccctt tt 762

<210> 863
<211> 738
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 719, 723
<223> n = A,T,C or G

<400> 863
agcagagtgg tcgttgtctt tctaggtctc agccggtcgt cgcgacgttc gcccgctcgc 60
tctgaggctc ctgaagccga aaccagctag actttcctcc ttcccgcctg cctgtagcgg 120
cgttgttgcc actccgccac catgttcgag gcgcgcctgg tccagggctc catcctcaag 180
aaggtgttgg aggcactcaa ggacctcatc aacgaggcct gctgggatat tagctccagc 240
ggtgtaaacc tgcagagcat ggactcgtcc cacgtctctt tggtgcagct caccctgcgg 300
tctgagggct tcgacaccta ccgctgcgac cgcaacctgg ccatgggcgt gaacctcacc 360
agtatgtcca aaatactaaa atgcgccggc aatgaagata tcattacact aagggccgaa 420
gataacgcgg ataccttggc gctagtattt gaagcaccaa accaggagaa agtttcagac 480
tatgaaatga agttgatgga tttagatgtt gaacaacttg gaattccaga acaggagtac 540
agctgtgtag taaagatgcc ttctggtgaa tttgcacgta tatgccgaga tctcagccat 600
attggagatg ctgttgtaat ttcctgtgca aaagacggag tgaaattttc tgcaagtgga 660
gaacttggaa atggaaacat taaattgtca cagacaagta atgtgcgata aaagaggang 720
aancttgttc ccattaga 738

<210> 864
<211> 704
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 8, 14, 155, 612, 620, 640, 662, 669
<223> n = A,T,C or G

<400> 864
tctctttntt tganggaatg gtacaaatca aagaacttaa gtggatgttt tggtacaact 60
tatagaaaag gtaaaggaaa ccccaacatg catgcactgc cttggtgacc agggaagtca 120
ccccacggct atggggaaat tagcccgagg cttanctttc attatcactg tctcccaggg 180
tgtgcttgtc aaagagatat tccgccaagc cagattcggg cgctcccatc ttgcgcaagt 240
tggtcacgtg gtcacccaat tctttgatgg ctttcacctg ctcattcagg taatgtgtct 300
caatgaagtc acacaaatgg gggtcatttt tgtcagtggc cagtttgtgc agttccagta 360
gtgactgatt cacatttttt tccaaatgta atgcacactc cattgcattc agcccgctct 420
cccagtcatc acagtctggt ttcttgatat cctgaaggaa gattcggcca cctcgttggt 480
tctgcagctt catcagtttc tcagcatgtt ccctctcctc atgagattgg tgaagaaagt 540
atttggcaaa gttcttcaaa gccacatcat cgcggtcaaa gtagtaagac atggacaggt 600
aaaccgtagg angcgtagan ctccaggttg atctggcggn tgatggcggc ctcttgagtc 660
cngggggggna agttctgggc gccccctgcc aaaggggggga cccc 704

<210> 865
<211> 713
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 619, 620, 635, 638, 683, 703
<223> n = A,T,C or G

<400> 865
cctttttttt tttttttttt gagaattctt ctgtatttta ttgcactcaa catttaatag 60
aagacattta cattattttt agaaaatcca ccgatgttgc acaatggcac atatttgtaa 120
agacaaggct cattaattca gatatttgga attcaaaaat atttaaagtt aaccacagca 180
taatgaatcc tcaacgtcca gagttctaca aaaatccagc aaaacttact tttactcatt 240
catcagttct atgtcactcc ttagtttccc taaaaaaata tggctttata aaaagtagct 300
tctataattc acaaaatgaa gagttttatt ataatttgag tatcatctct gtatcaccga 360
cagcacagct ttagaaaatt attgcttttc ttattatctt attatttcag gtttcattac 420
acatcgagta cccatgcagg actcactaca ttgtataata actatgatct atagtgataa 480
aaatatagaa gtatctttga ttttaatcct aaaagcaggg ggaaaaagtc accttatctt 540
aatgttaaca aaatcaagag ctaccoctaa tatatcgatc aaaccacttc ttatggcttt 600
gcttatagtt gctcatggnn ctttcaaaat gatgnggnag ctacccttct tttctgacaa 660

agggattatt ttcaacaaga gcnattattt tttgagcccc aanataaacc ccc 713

<210> 866
<211> 697
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 632, 668, 693
<223> n = A,T,C or G

<400> 866
ttttttttt aaagaagtaa gcctttattt ccttgttttg caaataaaac tggctaagtt 60
ggttgctttt tggtgattag tcaaagagac caaatcccat atcctcgtcc gactcctccg 120
actcttcctt ggcttcaacc ttagctgggg ctgcagcagc agcaggagca gctgtggtgg 180
cagcagccac aggggcagca gccacaaagg cagatggatc agccaagaag gccttgacct 240
tttcagcaag tgggaaggtg taatccgtct ccacagacaa ggccaggact cgtttgtacc 300
cgttgatgat agaatggggt actgatgcaa cagttgggta gccaatctgc agacagacac 360
tggcaacatt gcggacaccc tccaggaagc gagaatgcag agtttcctct gtgatatcaa 420
gcacttcagg gttgtagatg ctgccattgt cgaacacctg ctggatgacc agcccaaagg 480
agaaggggga gatgttgagc atgttcagca gcgtggcttc gctggctccc actttgtctc 540
cagtcttgat cagctgcaca tcactcagga tttcaatggt gcccctggag attttagtgg 600
tgatacctaa agcctggaaa aaggaggtct tntcgggccc gagaccagtg gttctgggct 660
tggcacantg actttcacat gggggcaatg ggnacca 697

<210> 867
<211> 677
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 130, 245, 373, 433, 475, 570, 595, 603, 654, 667
<223> n = A,T,C or G

<400> 867
cctttttttt tttttttca catgctttta attcaagtct ttcacatttc aaattctaag 60
atgtattttt aaaaactgac ttgcataatc tattttaaat gatagctgct catgatgtat 120
ttttctctan aaactgaaga cgcacttgaa ataatatttt aatttataac ctgttttcac 180
aataggatac catgtgtatg tacataaaaa gggaaaggaa gaggttcctg gatgagggtg 240
cctanaaatt agctgagtcc ttttaaaggg aagagagagg aaataatcaa gagaaggaaa 300
gagcattctt gaaggagtaa aaaacaactg aaaaagttaa ggaagttgga tcagaaaaag 360
actatttctg aanaaacaat ggatgaccaa agtagataaa actaaatgta aaatatgcag 420
gattttagtt ggnggaagac aggataattg gatttgaaca atggcatatc aaacngtaga 480
agtatctgca aagacacggc aaaccagaaa ctgctgatac gagtataaag cagtgcaatc 540
actttggtgg gcaagttggc agtggtgaan aaatgtaggc cttatgatcc agcantccta 600
ctngatggag atatcacaga aactcttaca cctattctag gctgggcatt gccngaattt 660
ttatagngaa tgaaaac 677

<210> 868
<211> 123
<212> DNA
<213> Homo sapiens

<400> 868
ctttcaatag atcgcagcga gggagctgct ctgctacgta cgaaaccccg acccagaagc 60
aggtcgtcta cgaatggttt agcgccaggt tccccacgaa cgtgcggtgc gtgacgggcg 120
agg 123

<210> 869
<211> 642

<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 639, 642
<223> n = A,T,C or G

<400> 869
gtcgacccca ggagaaagcc atgttcagtt cgagcgccaa gatcgtgaag cccaatggcg 60
agaagccgga cgagttcgag tccggcatct cccaggctct tctggagctg gagatgaact 120
cggacctcaa ggctcagctc agggagctga atattacggc agctaaggaa attgaagttg 180
gtggtggtcg gaaagctatc ataatctttg ttcccgttcc tcaactgaaa tctttccaga 240
aaatccaagt ccggctagta cgcgaattgg agaaaaagtt cagtgggaag catgtcgtct 300
ttatcgctca gaggagaatt ctgcctaagc caactcgaaa aagccgtaca aaaaataagc 360
aaaagcgtcc caggagccgt actctgacag ctgtgcacga tgccatcctt gaggacttgg 420
tcttcccaag cgaaattgtg ggcaagagaa tccgcgtcaa actagatggc agccggctca 480
taaaggttca tttggacaaa gcacagcaga acaatgtgga acacaaggtt gaaacttttt 540
ctggtgtcta taagaagctc acgggcaagg atgttaattt tgaattccca gagtttcaat 600
tgtaaacaaa aatgactaaa taaaaagtat atattcacng tn 642

<210> 870
<211> 758
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 682, 753, 758
<223> n = A,T,C or G

<400> 870
gtcgacctca ggtggtccac ccgagacccc ttgagcacca accctagtcc cccgcgcggc 60
ccccttattcg ctccgacaag atgaaagaaa caatcatgaa ccaggaaaaa ctcgccaaac 120
tgcaggcaca agtgcgcatt ggtgggaaag gaactgctcg cagaaagaag aaggtggttc 180
atagaacagc cacagcagat gacaaaaaac ttcagttctc cttaaagaag ttaggggtaa 240
acaatatctc tggtattgaa gaggtgaata tgtttacaaa ccaaggaaca gtgatccact 300
ttaacaaccc taaagttcag gcatctctgg cagcgaacac tttcaccatt acaggccatg 360
ctgagacaaa gcagctgaca gaaatgctac ccagcatctt aaaccagctt ggtgcggata 420
gtctgactag tttaaggaga ctggccgaag ctctgcccaa acaatctgtg gatggaaaag 480
caccacttgc tactggagag gatgatgatg atgaagttcc agatcttgtg gagaattttg 540
atgaggcttc caagaatgag gcaaactgaa ttgagtcaac ttctgaagat aaaacctgaa 600
gaagttactg ggagctgcta ttttatatta tgactgcttt ttaagaaatt tttgtttatg 660
gatctgataa aatctagatc tntaatattt ttaagcccaa gccccttggg acactgcagc 720
tcttttcagt ttttgcttat acacaattca ttntttgn 758

<210> 871
<211> 763
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 713, 743, 757
<223> n = A,T,C or G

<400> 871
ctgggggcctc ccgggaggag agagggcttt gccttgaaac ccgggacgcc aggggcgctc 60
ccgcaagtgg gggtcctccg ggacttggaa cgcccccggct gggtggtgtc cggcgtcct 120
ttccccgctt cttcccacct cggctggtcc cgtttcctcc tgcgcccagt gcggacctgt 180
ctcggcgccc gctgccctct caccgcccca cgcaggatcc cggcctggtc accgggcagt 240
gtgatgcttc ccgactgccg cggggacagc gaggcacaca cagggcttgg gccgcgccgg 300

aggccacacg gcctggctga gttgctcctg gtctcccgcc tctcccaggc gacccggagg 360
tagcatttcc caggaggcac ggtccccccc agggggatgg gcacagccac gccagatgga 420
cgagaagacc aagaaagcag aggaaatggc cctgagcctc acccgagcag tggcgggcgg 480
ggatgaacag gtggcaatga agtgtgccat ctggctggca gagcaacggg tgcccctgag 540
tgtgcaactg aagcctgagg tctccccaac gcaggacatc aagattcctc atggtgcaaa 600
atggccattc cagctccatc cagccattac atcacaggag gaagggaaga aagacacccc 660
tccacactct tctaaagagc atagctcaaa aattgtacac cacttctttc cgntaaattc 720
cttgtgggac cagaacttga ttncccacaa gcttccngtt taa 763

<210> 872
<211> 586
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 346, 352, 357, 373, 380, 381, 383, 386, 388, 395, 398, 407,
414, 427, 440, 443, 447, 454, 457, 466, 467, 487, 507, 508,
513, 514, 519, 526, 530, 532, 560, 582
<223> n = A,T,C or G

<400> 872
cacgtgatgg gaagctggtg tctgagtcct ctgacgtcct gcccaagtga acagctgcgg 60
cagcccctcc cagcctaccc ctcctgcgct gccccagagc ctgggaagga ggccgctatg 120
cagggtagca ctgggaacag gagacccacc tgaggctcag ccctagccct cagcccacct 180
ggggagttta ctacctgggg accccccttg cccatgcctc cagctacaaa acaattcaat 240
tgcttttttt ttttggtcca aaataaaacc tcagctagct ctgccaaaaa aaaaaaaaaa 300
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aggggnggcc gntcaanttt 360
aaagggcccg ttnaaacccn ntnatnancc tcaantgngc cttttanttg ccanccattt 420
gttgttngcc cctcccccgn gcnttcnttg accntgnaag gggccnntcc cactgtcctt 480
tcctaanaaa atgaggaaat tgcatcnnat tgnntgagna ggggtnattn tnttttgggg 540
gggggggggg ggcaggacan caagggggag gattgggaaa anaata 586

<210> 873
<211> 302
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 295, 300
<223> n = A,T,C or G

<400> 873
cacgtgatgg gaagctggtg tctgagtcct ctgacgtcct gcccaagtga acagctgcgg 60
cagcccctcc cagcctaccc ctcctgcgct gccccagagc ctgggaagga ggccgctatg 120
cagggtagca ctgggaacag gagacccacc tgaggctcag ccctagccct cagcccacct 180
ggggagttta ctacctgggg accccccttg cccatgcctc cagctacaaa acaattcaat 240
tgcttttttt ttttgggtcc aaaataaaac ctcagctagc tctgccaaaa taaanaccan 300
ca 302

<210> 874
<211> 517
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 446, 503, 505
<223> n = A,T,C or G

<400> 874

aacgcgagtg ggagcaccag gatctcgggc tcggaacgag actgcacgga ttgttttaag 60
aaaatggcag acaaaccaga catgggggaa atcgccagct tcgataaggc caagctgaag 120
aaaacggaga cgcaggagaa gaacaccctg ccgaccaaag agaccattga gcaggagaag 180
cggagtgaaa tttcctaaga tcctggagga tttcctaccc ccgtcctctt cgagacccca 240
gtcgtgatgt ggaggaagag ccacctgcaa gatggacacg agccacaagc tgcactgtga 300
acctgggcac tccgcgccga tgccaccggc ctgtgggtct ctgaagggac ccccccccaa 360
tcggactgcc aaattctccg gtttgccccg ggatattata gaaaattatt tgtatgaata 420
atgaaaataa aacacacctc gtggcnaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 480
aaaaaaaaaa aaaaaaaaaa aananaaagg gggggcc 517

<210> 875
<211> 721
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 704, 716
<223> n = A,T,C or G

<400> 875
gtcgacggac cctagagata aggcgcttca ggactaccgc aagaagttgc ttgaacacaa 60
ggagatcgac ggccgtctta aggagttaag ggaacaatta aaagaactta ccaagcagta 120
tgaaaagtct gaaaatgatc tgaaggccct acagagtgtt gggcagatcg tgggtgaagt 180
gcttaaacag ttaactgaag aaaaattcat tgttaaagct accaatggac caagatatgt 240
tgtgggttgt cgtcgacagc ttgacaaaag taagctgaag ccaggaacaa gagttgcttt 300
ggatatgact acactaacta tcatgagata tttgccgaga gaggtggatc cactggttta 360
taacatgtct catgaggacc ctgggaatgt ttcttattct gagattggag ggctatcaga 420
acagatccgg gaattaagag aggtgataga attacctctt acaaacccag agttatttca 480
gcgtgtagga ataatacctc caaaaggctg tttgttatat ggaccaccag gtacgggaaa 540
aacactcttg gcacgagccg ttgctagcca gctggactgc aatttcttaa aggttgtatc 600
tagttctatt gtagacaagt acattggtga aagtgctcgt ttgatccaga gaaatgttta 660
attatgctag agatcatcaa ccatgcatca tttttatgga tganaataga tgcctnttgg 720
t 721

<210> 876
<211> 337
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 26
<223> n = A,T,C or G

<400> 876
tcttggtcct tttccaccat tttcancccc tccagggctt ggaggacccg gcgggccaca 60
ctcttggagc ctcggctgaa gtggctgggc atgacgccgt ttctctgacg tcccccatag 120
atcttggtca tggagccaac cccagcgcca ccccggaggt acaggtgccg cgctgtggaa 180
gcagctcgcg tgtagaacca gttctcatcg tagggagcaa gctctttgtg cttggccagc 240
ttgacggtat ccacccattc ggggactttc agcttcccgg actttttgag gaaggctgcc 300
agagctctga cgaactcctg ctggttcacg tcttta 337

<210> 877
<211> 531
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 529, 530
<223> n = A,T,C or G

<400> 877
tgctcggagt gtggtacttc tcctagttgc agtcaggctt catacgctat tgtcctgccc 60
gttagagcag ccagcgggta cagaatggat tttggaagag ggagtcacca ctggacctcc 120
aaggaagcca cgtgcagaca tctacaacct tcgatctcct gacgagttta ttgttggcca 180
aaaccaggct ttgattgaac caggatgaat gcgggtgttg gaagtagaat atatatatac 240
atataaaatt ggttgggagc cacgtgtacc agtgtgtgtt gatcttggct tgattcagtc 300
tgccttgtaa cagaaactgg cgatggaata tgagaggagc cctctggaaa gaaaaggaca 360
gaccctgtgc tttcatgaaa gtgaagatct ggctgaacca gttccacaag gttactgtat 420
acatagcctg agtttaaaag gctgtgccca cttcaagaat gtcattgtta gactttgaaa 480
tttctaactg cctacctgca taaagaaaat aaaatctttt aaatcaaann a 531

<210> 878
<211> 725
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 575, 605, 688, 699
<223> n = A,T,C or G

<400> 878
gtcgacctgc caacatggtg ttcaggcgct tcgtggaggt tggccgggtg gcctatgtct 60
cctttggacc tcatgccgga aaattggtcg cgattgtaga tgttattgat cagaacaggg 120
ctttggtcga tggaccttgc actcaagtga ggagacaggc catgcctttc aagtgcatgc 180
agctcactga tttcatcctc aagtttccgc acagtgccca ccagaagtat gtccgacaag 240
cctggcagaa ggcagacatc aatacaaaat gggcagccac acgatgggcc aagaagattg 300
aagccagaga aaggaaagcc aagatgacag attttgatcg ttttaaagtt atgaaggcaa 360
agaaaatgag gaacagaata atcaagaatg aagttaagaa gcttcaaaag gcagctctcc 420
tgaaagcttc tcccaaaaaa gcacctggta ctaagggtac tgctgctgct gctgctgctg 480
ctgctgctgc tgctgctgct gctgctgctg ctgctgctgc tgctaaagtt ccagcaaaaa 540
agatcaccgc cgcgagtaaa aaggctccag cccanaaggt tcctgcccag aaagccacag 600
gccanaaagc agcgcctgct ccaaaagctc agaagggtca aaaagctccc acccagaaag 660
cacctgctcc aaaggcatct tggcaaanaa aagcataang tgggcaatcc ataaaaagta 720
atcaa 725

<210> 879
<211> 787
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 27, 584, 634, 652, 671, 672, 695, 705, 712, 720, 727, 732,
733, 764, 785
<223> n = A,T,C or G

<400> 879
tttttttttt tttttaaaac aaacttnact ttatttcctc actttcactt aaaacttgat 60
tttataaaac acatgaaaaa acatttttaa gagttctgta tcacagaaca ttaaacagta 120
caaatatcca ttgcttcata ggttcaagtt acataaatta aagtcaaata attggaaact 180
gattcaatag ggaaaactat acatgaaatg aaggtcaaaa ggagctatac agcaatattt 240
cattgtttat agattatgag ttactttcag gaccttaaca aagattctga atatttagac 300
ttcctttgtt gtattttata cttaaatatc tccctaccta tactgagtca aactacttga 360
ccaaaacatc tgatttagga aagcatctag ctttatagca caagtttttc catctacagt 420
tactatcttc aaaggaatat acatcacaat gttgacaaaa aaacctcctg gttccttttg 480
aacaatgtgc aataaattca tgatgttaac tccatggtaa gtcaaatagg taccaaaaaa 540
ataaaaggaa caattacaca cagttcagta agtatcattt tggntttctc catgtaaaaa 600
ttaacccaat ggaaataaaa catatcaact tttngatgac cctggatttt cngggaaaaa 660
cccccatttt nnaaaaattt acccaaattt acctnttaat ttttncccctc cnaggggccn 720
ttccctncaa gnnccttttg gaccaagggg aaaatttttt gttnaggggg cccccccat 780

tgccnta 787

<210> 880
<211> 123
<212> DNA
<213> Homo sapiens

<400> 880
ctttcaatag atcgcagcga gggagctgct ctgctacgta cgaaaccccg acccagaagc 60
aggtcgtcta cgaatggttt agcgccaggt tccccacgaa cgtgcggtgc gtgacgggcg 120
agg 123

<210> 881
<211> 661
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 111, 475, 582, 655, 661
<223> n = A,T,C or G

<400> 881
cctttttttt ttttttttcta agcaaaatca ccaatttatt taagtttcaa aaattttttt 60
ttccataaat atgttcttta acatgcacat tctgcttaca ttgtttaggg ngctttttat 120
tgtgcctaaa aatttgcaat atggtgaaat aaaatattta aaaatggttg aataccatac 180
ggaagatgaa atctcatatt tatagcatgt aattcaattc tcatgtatgc ataattaatc 240
aaaattgtgt ctttaaatga catcttgaca ttttttgaat tgcactaaga aacactagtg 300
tctaccattc attttaacag acttatttat gtttagcttt attaacagta taacattttc 360
atgcaatctt aaattttgtt ttaattttta caatgttgat ttaattcaaa ttaacaaata 420
ttcaagccta catgagagac aaatgaaatg agactacctt tatatataat cagcnaaatt 480
ctttttaaga gtaaaaagtt aatattggga tttaaaaacc taaatttcca atgttactgc 540
tgacaatcca atccaactat atgtatatta cttaggccac angactgccc attagtcttt 600
cttgtccgga gagcaaatta atctccttga acccattttt tcctccagcc atcangcttt 660
n 661

<210> 882
<211> 729
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 492, 696, 699
<223> n = A,T,C or G

<400> 882
cctttttttt tttttttaca gtcgatttcc tctcatttat tccttgtgga aaaagaaaaa 60
cacaaatctt aaaaactaaa gcaagtcagg gaagcctgga aagataccca gatttgataa 120
catgttagaa ggaaatccag gctaaggaat ctcattttct agctttgatc tggttgtcag 180
ttgggatgga cttgcccaag tgatggccca cagaaaggcc aaatttcttg tttttctcct 240
catcctgtac ctctttttttc attaagaatc ctgcctggaa gtttaggtca aagaggctgc 300
ttggagcaaa atacagtggt gtctcatccc aaatattctc caggcgtttc ttccatcctt 360
ccaggatttg aattcgggcg tctgctggag tgtgcccaat gctatatgtc agttgaggtt 420
ctaagacttg gaagccacag aaatgcagaa tgccactctg aattggccag agaatgacat 480
tcatgtcccc gnggatccct tgcagagagt acatggagcc actgccacca gtggtgatgg 540
aaagcactgc cttcttactc cggaagggtc ctttgtcata catggcagcg taagtgtaag 600
caaactctcc tatgaacact cgctcaaacc ggcttttaga atgggcaggg gactccaaac 660
cactgcaggg ggaactggaa tatcacaagg gctggnggnt tccagctttt tttgttcagc 720
cccaaatat 729

<210> 883

<211> 453
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 4, 12, 77, 98, 99, 100, 117, 119, 127, 153, 156, 158, 163, 166, 199, 203, 204, 206, 216, 220, 222, 228, 233, 255, 257, 263, 266, 267, 277, 278, 281, 288, 300, 301, 314, 318, 319, 323, 324, 326, 329, 330, 332, 333, 336, 338, 340, 342
<223> n = A,T,C or G

<221> misc_feature
<222> 343, 347, 349, 350, 356, 382, 397, 439, 451
<223> n = A,T,C or G

<400> 883
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tgtnttacta tnatttaggg cttttttttc aaagaacaaa aattataagc ataaaaactc 60
aggtatcaga aagactnaaa aggctgtttt tcactttnnn catattttgt ttccagncnt 120
taagtgngtc atacagttgt tgccactgct gtnttncnaa tgnccnaagt gtgctatgac 180
tgacaactac ttttctctng gcnngntcaa tgttcncatn cnccattnta atnattacgg 240
cgtgacccat ggagntncct gcntgnncaa tttcaanntg naaaattngc tgcattgtgn 300
naaaagaaat tgcngtcnnt tgnncnggnn tnnccntnan anngagnann ctcatntttg 360
ccatattctg gtcatgtaac angccaagtg aatgggntga acgctttact attctgataa 420
aacttgacct atgatgccna tttagcactc nca                              453
```

<210> 884
<211> 558
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 4, 7, 484, 489, 494, 501, 505, 550, 553
<223> n = A,T,C or G

<400> 884
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tgangangat caggctgctg agcttcgtgc ttatctgaaa tctaaaggag ctgagatttc 60
agaagagaac tcggaaggtg gacttcatgt tgatttagct caaattattg aagcctgtga 120
tgtgtgtctg aaggaggatg ataaagatgt tgaaagtgtg atgaacagtg tggtatccct 180
actcttgatc ctggaaccag acaagcaaga agctttgatt gaaagcctat gtgaaaagct 240
ggtcaaattt cgcgaaggtg aacgcccgtc tctgagactg cagttgttaa gcaacctttt 300
ccacgggatg gataagaata ctcctgtaag atacacagtg tattgcagcc ttattaaagt 360
ggcagcatct tgtggggcca tccagtacat cccaactgag ctggatcaag ttagaaaatg 420
gatttctgac tggaatctca ccactgaaaa aaagcccacc cttttaagac tactttatga 480
ggcncttgng gatngtaaga ngagngatgc ttgttcaaaa gtcatggcgg aattgctccg 540
gaaagttccn canaggac                                               558
```

<210> 885
<211> 440
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 131, 375, 378, 381, 383, 400, 418
<223> n = A,T,C or G

<400> 885
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cctttttttt tttttttag ttggataatg ttttactatg atttagggct tttttttcaa 60
agaacaaaaa ttataagcat aaaaactcag gtatcagaaa gactcaaaag gctgttttc 120
actttgttca natttgttt ccaggcatta agtgtgtcat acagttgttg ccactgctgt 180
```

```
tttccaaatg tccgatgtgt gctatgactg acaactactt ttctctgggt ctgatcaatt 240
ttgcagtaga ccattttagt tcttacggcg tcaataacaa atgcttcaac atcatcagct 300
ccaatctgaa gttcttgctg cattgtgtca aaagaaattt ccttattttc tactgccatt 360
cccataaaag taagnaantc ncnttttttgc catattctgn tcatgtaaca ggccaagnga 420
atcaatgaag tctttattat                                             440
```

```
<210> 886
<211> 441
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 31, 42, 53, 78, 93, 95, 103, 181, 210, 216, 225, 256, 315,
348, 350, 355, 380, 386, 417, 428
<223> n = A,T,C or G

<400> 886
cctttttttt tttttttttt tttttttggg naaaaagctt tntcatttcc acncaccctc 60
caccttgggc tgctgggngt ataggcacat ggngngataa gtntttggta tggaatgaag 120
ctctatcctt tcaaagtcac caggttcggg ttcccagccc taagtggcca tggcactggg 180
nggtctgggt tcacggggct cctggagctn tcgggngtcc cgtgngccac cccaattcct 240
tgcgtgcatg cccacnaaag gccgcccagg cacccccggg gaccccatgg aagtgagttt 300
tggttctgct ctggnttcga agtgcttctc aagctgaagc cttagggngn ggaanaacct 360
acagttagct ggagcttccn agtgantagc ggctgcgggc ctggcttcgg ttacggnttc 420
ggtcccancg gggtctgaag g                                           441

<210> 887
<211> 724
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 21, 23, 573, 623, 651, 706, 723
<223> n = A,T,C or G

<400> 887
gcgccgctgg gcctgcaggt ntntgtcgag cagcggacgc cggtctctgt tccgcaggat 60
ggggtttgtt aaagttgtta agaataaggc ctactttaag agataccaag tgaaatttag 120
aagacgacga gagggtaaaa ctgattatta tgctcggaaa cgcttggtga tacaagataa 180
aaataaatac aacacaccca aatacaggat gatagttcgt gtgacaaaca gagatatcat 240
ttgtcagatt gcttatgccc gtatagaggg ggatatgata gtctgcgcag cgtatgcaca 300
cgaactgcca aaatatggtg tgaaggttgg cctgacaaat tatgctgcag catattgtac 360
tggcctgctg ctggcccgca ggcttctcaa taggtttggc atggacaaga tctatgaagg 420
ccaagtggag gtgactggtg atgaatacaa tgtggaaagc attgatggtc agccaggtgc 480
cttcacctgc tatttggatg caggccttgc cagaactacc actggcaata aagtttttgg 540
tgccctgaag ggagctgtgg atggaggct tgnctatccc tcacagtacc aaacgattcc 600
ctggttatga ttctgaaagc aangaattta atgcagaagt catcggaagc ncatcatggg 660
ccagaatgtt gcagattaca tgcgctctta atggaagaag atgaanatgc ttacaagaaa 720
cant                                                              724

<210> 888
<211> 711
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 603, 606, 621, 648, 689, 693
<223> n = A,T,C or G
```

<400> 888
ggcagctgtc ggctggaagg aactggtctg ctcacacttg ctggcttgcg catcaggact 60
ggctttatct cctgactcac ggtgcaaagg tgcactctgc gaacgttaag tccgtcccca 120
gcgcttggaa tcctacggcc cccacagccg gatcccctca gccttccagg tcctcaactc 180
ccgcggacgc tgaacaatgg cctccatggg gctacaggta atgggcatcg cgctggccgt 240
cctgggctgg ctggccgtca tgctgtgctg cgcgctgccc atgtggcgcg tgacggcctt 300
catcggcagc aacattgtca cctcgcagac catctgggag ggcctatgga tgaactgcgt 360
ggtgcagagc accggccaga tgcagtgcaa ggtgtacgac tcgctgctgg cactgccgca 420
ggacctgcag gcggcccgcg ccctcgtcat catcagcatc atcgtggctg ctctgggcgt 480
gctgctgtcc gtggtggggg gcaagtgtac caactgcctg gaggatgaaa gcgccaaggc 540
caagaccatg atcgtggcgg gcgtggtgtt cctgttggcc ggccttatgg tgatagtgcc 600
ggngtnctgg aacggcccac nacatcatcc aagacttcta caatccgntg gtggcctccg 660
ggcagaagcg ggaaatgggt gcctccctnt acnccggtgg gccgctcccg g 711

<210> 889
<211> 776
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 675, 690, 711, 718, 742, 759
<223> n = A,T,C or G

<400> 889
gtcgaccgag agtcgtcggg gtttcctgct tcaacagtgc ttggacggaa cccggcgctc 60
gttccccacc ccggccggcc gcccatagcc agccctccgt cacctcttca ccgcaccctc 120
ggactgcccc aaggcccccg ccgccgctcc agcgccgcgc agccaccgcc gccgccgccg 180
cctctcctta gtcgccgcca tgacgaccgc gtccacctcg caggtgcgcc agaactacca 240
ccaggactca gaggccgcca tcaaccgcca gatcaacctg gagctctacg cctcctacgt 300
ttacctgtcc atgtcttact actttgaccg cgatgatgtg gccttgaaga actttgccaa 360
atactttctt caccaatctc atgaggagag ggaacatgct gagaaactga tgaagctgca 420
gaaccaacga ggtggccgaa tcttccttca ggatatcaag aaaccagact gtgatgactg 480
ggagagcggg ctgaatgcaa tggagtgtgc attacatttg gaaaaaaatg tgaatcagtc 540
actactggaa ctgcacaaac tggccactga caaaaatgac cccatttgt gtgacttcat 600
tgagacacat tacctgaatg agcaggtgaa agccatcaaa gaattgggtg accacgtgac 660
caacttgcgc aagangggag cgcccgaatn tggctttggc gggaatatct ntttgacnag 720
cacaccctgg gagaaagtga tnatgaaagc taagcctcng gctaatttcc ccataa 776

<210> 890
<211> 602
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 26, 301, 400, 447, 467, 482, 499, 534, 545, 577, 595
<223> n = A,T,C or G

<400> 890
cctttttttt tttttttttt tgatgnttga aattcaagta actttattta aattcaaaaa 60
caattcttaa aactgcattt agagtcaaga ccctttttgta ttataaaaat cacaagtatt 120
tctaagagac aaaaatactt ctaggttaac tagaccagat ctgactttgg actttattct 180
ttaaacaaat tgcagagaat agagaaaaaa ataggttatt tacagaaaac aatatctaca 240
tatgtactta gaggtacaaa tttggtgaca gaaaagactt cagtatatgc tggcatctta 300
naagcagttc tcaaagagct tagttttatt ttcttgaatt ttaagaatgc ctaagatcct 360
tcttcatcct cgatcttggg agccaagtag tattttaagn gtcccatatc cgcaatttta 420
tactctacaa caaggggtac atctgcngac atactgagtg tcaccgntga agagagtgga 480
gnggcttttg taaagaagnt caggggcctc agggcaaaag ttagttgaac tggngtcttc 540
atctntatgg gaacagcttc ctcctgttta tcgacantac ttggctggga caatngtaat 600
gg 602

<210> 891
<211> 446
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 427, 444
<223> n = A,T,C or G

<400> 891
gtcgacagcg ccttggtttg cccactagga ttgttttaag aaaatggcag acaaaccaga 60
catgggggaa atcgccagct tcgataaggc caagctgaag aaaacggaga cgcaggagaa 120
gaacaccctg ccgaccaaag agaccattga gcaggagaag cggagtgaaa tttcctaaga 180
tcctggagga tttcctaccc ccgtcctctt cgagacccca gtcgtgatgt ggaggaagag 240
ccacctgcaa gatggacacg agccacaagc tgcactgtga acctgggcac tccgcgccga 300
tgccaccggc ctgtgggtct ctgaagggac cccccccaa tcggactgcc aaattctccg 360
gtttgccccg ggatattata gaaaattatt tgtatgaata atgaaaataa aacacacctc 420
gtggcanaaa aaaaaaaaa aaanaa 446

<210> 892
<211> 641
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 363, 393, 426, 519, 526, 535, 558, 570, 572, 609, 627
<223> n = A,T,C or G

<400> 892
cctttttttt tttttttgga caactctttt tattatcttt ctacagtaaa caaagtataa 60
tcccaaagtt ctgcagatat ttaattggga aaagacacaa ccctacagtc agttgggaaa 120
gactaccttt agaagagaaa aatgaattgt ttgggaagaa atacattaac agaactgtat 180
ttctaacgca tttacttttt aagccatcaa atgttctcat ttgagccacg tgttctgtgc 240
acattcagag aacctttga aaatgaatta agtctttgcc ttctttagtc tgttgataaa 300
ctcttgagaa tgctgagaaa tctccagaaa accagtatgt tttctcttgg gaacgaattg 360
canagcctct tgccaattac cattgttttt canacataac aaaatacgta tcatttgatc 420
taaggngaga tttttgttac caatttccca ttgtaaatat ttatctaatg gaaggcattc 480
agttgccagg ttcagccgtt ttgccttggc tagggatgng cctggntgca tactnttatc 540
aacaaaagga cccaattnca taaactttgn cntgcctgaa agtaggcata acattgggga 600
gaatctgcng ttaaatagga taatccnggc cttttggaaa a 641

<210> 893
<211> 611
<212> DNA
<213> Homo sapiens

<400> 893
ccagtttgta aaagacagaa tttcggtggt gcaggccctg gttctgaccc aacagtatca 60
ccaactcaaa tcaatagatc cagaagaagt agaatcgcgt gaataaaaga ttttattcag 120
tttccagaaa gaggggggaa tgaaagaccc caccataagg cttagcaagc tagctgcagt 180
aacgccattt tgcaaggcat gaaaaagtac cagagctgag ttctcaaaag tcacaaggaa 240
gtttagttaa agaataaggc tgaacaaaac tgggacaggg gccaaacagg atatctgtgg 300
tcgagcacct gggcccggc tcagggccaa gaacagatgg tactcagata aagcgaaact 360
agcaacagtt tctggaaagt cccacctcag tttcaagttc cccaaaagac cgggaaaaac 420
cccaagcctt atttaaacta accaatcagc tcgcttctcg cttctgtaac cgcgcttttt 480
gctccccagc cctataaaaa gggtaaaaac cccacactcg gtgcgccagt catccgatag 540
actgagtcgc ccgggtaccc gtgttcccaa taaagccttt tgctgtttgc atccgaaaaa 600
aaaaaaaaaa g 611

<210> 894

<211> 178
<212> DNA
<213> Homo sapiens

<400> 894
ctaaatgcta tatttaagga taggcatcca ggaacacaga ttccaaagaa tggaagccag 60
tgctccaaag tggagaagtt ttgggggtca tttatataaa taaggtttgg gaagcttaac 120
aatgtttcaa cattttccac acaaggctag cacacagtta cagtaatctg atgtcgac 178

<210> 895
<211> 644
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 553, 556, 603, 636
<223> n = A,T,C or G

<400> 895
ccccgtttcc caggacgaag ggcactccgc accggacccc ggtcccggcg cgcggcgggg 60
cacgcgccct cccgcgcgcg cggggcgcgt ggaggggggg gcggcccgcc ggcggggaca 120
ggcgggggac cggctatccg aggccaaccg aggctccgcg gcgctgccgt atcgttccgc 180
ctgggcggga ttctgactta gaggcgttca gtcataatcc cacagatggt agcttcgccc 240
cattggctcc tcagccaagc acatacacca aatgtctgaa cctgcggttc ctctcgtact 300
gagcaggatt accatggcaa caacacatca tcagtagggt aaaactaacc tgtctcacga 360
cggtctaaac ccagctcacg ttccctatta gtgggtgaac aatccaacgc ttggtgaatt 420
ctgcttcaca atgataggaa gagccgacat cgaaggatca aaaagcgacg tcctatgaac 480
gcttggccgc cacaagccag ttatccctgt ggtaactttt ctgacacctt ctgcttaaaa 540
cccaaaaggt canaangatc gtgaggcccc gctttcacgg tctgtatttc gtacttgaaa 600
atnaagatca agccgagctt tttgccttct tgcttnccac ggga 644

<210> 896
<211> 262
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 58, 132, 133, 139, 140, 147, 262
<223> n = A,T,C or G

<400> 896
gtcgaccata aatgaaattg aaaatggtat taaagatctg caactactat ccaacttntt 60
ttatgagctg ctacatttata aatgaaattg aaaatggtat taaagatctg caactactat 120
ccaacttata tnnctgctnn caaagtnaag aatctttata gttctaatcc attaaatata 180
aagcaagata ataaaaattg ttgcttttgt taaaaaaaaa aaaaaaaaaa aaaaaaaaaa 240
aaaaaaaaaa aaaaaaaggg gn 262

<210> 897
<211> 682
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 51, 53, 54, 591, 613, 614, 619, 649, 678
<223> n = A,T,C or G

<400> 897
acaccgcctt ttccctttct ctaaaaaaat cattcccagc ccttgaaaac ntnngcccag 60
cacactccag caacactctc ttctgcccag ccccgccggg atatctgagg cagggctgga 120

ccaccccaga gggcagcagg gcctttaccc agtggcctgt tggctagcct gggcctccct 180
ggagagggtt gacagtggaa gggaacagga ggggcatttg gcctgagacc cctgcttttg 240
ggagaggcta gcagggtggt tcctgcccag catgcccagc tcctccctgg gtgactcgga 300
gtctttccca tgtcagagcc cccaaatggg ggtagcaagg agcacctttc tggaaccccc 360
tatagcatcc aagtttcttt ctgggctctc ttgccttttc ccccctttca cagatggcac 420
ccctgggcat ctgtccttgc ctaggtgatt ttggaggttg gtgccttcct gggaactagc 480
caccagctta tctgcttccc ttcccctgca tcacttccca taggcctggg gtttctagac 540
tggggcctgg ccaccccttt ccccactcca cgagtgagtc ggcctccaga naagactggc 600
acaattccaa ctnnagtcna cccatgcttg cctctgccct tccactcana actaaaacct 660
gctttcattt ctggctangg aa 682

<210> 898
<211> 678
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 58, 59, 595, 655, 668
<223> n = A,T,C or G

<400> 898
gtcgaccagc tgtcggctgg aaggaactgg tctgctcaca cttgctggct tgcgcatnnt 60
gactggcttt atctcctgac tcacggtgca aaggtgcact ctgcgaacgt taagtccgtc 120
cccagcgctt ggaatcctac ggcccccaca gccggatccc ctcagccttc caggtcctca 180
actcccgcgg acgctgaaca atggcctcca tggggctaca ggtaatgggc atcgcgctgg 240
ccgtcctggg ctggctggcc gtcatgctgt gctgcgcgct gcccatgtgg cgcgtgacgg 300
ccttcatcgg cagcaacatt gtcacctcgc agaccatctg ggagggccta tggatgaact 360
gcgtggtgca gagcaccggc cagatgcagt gcaaggtgta cgactcgctg ctggcactgc 420
cgcaggacct gcaggcggcc cgcgccctcg tcatcatcag catcatcgtg gctgctctgg 480
gcgtgctgct gtccgtggtg gggggcaagt gtaccaactg cctggaggat gaaagcgcca 540
aggccaagac catgatcgtg gcgggcgtgg tgttcctgtt ggccggcctt atggngatag 600
tgccggtgtc ctggacggcc cacaacatca tccaagactt ctacaatccg ctggnggcct 660
ccgggcanaa gccgggaa 678

<210> 899
<211> 550
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 20, 245, 331, 358, 393, 417, 424, 436, 521, 531
<223> n = A,T,C or G

<400> 899
cctttttttt ttttttttcan aaaagccagt ttttttttta tttgtaaagc tctgccataa 60
acttctagcg tgtgccaatg gtcacctgcc acactcgcac caggttgtcc gtgtagccag 120
caaacagagt ctggccatca gcagaccagg ccagggaggt gcactggggt ggttctgcct 180
tgctgctggt actgataact tcttgcttca gttcatctac aatgatcttt ccctctaaat 240
cccanatctt gatgctgggg cctgtggcag cacacagcca gtagcggtta gggctgaagc 300
acagggcgtt gatgatgtcc ccaccatcta ncgtgtaaag gtgtttgcct tcgttganat 360
cccataacat ggcctggcca tccttgcctc canaagcaca gagggatcca tctgganaga 420
cagncaccgt gttcanatag cctgtgtggc caatgtggtt ggtcttcagc ttgcagttag 480
ccaggttcca taccttgacc agcttgtccc agccacagga nacgatgata nggttgctgc 540
tgttgggcga 550

<210> 900
<211> 607
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 519, 557, 586, 596
<223> n = A,T,C or G

<400> 900
cagctgtcgg ctggaaggaa ctggtctgct cacacttgct ggcttgcgca tcaggactgg 60
ctttatctcc tgactcacgg tgcaaaggtg cactctgcga acgttaagtc cgtccccagc 120
gcttggaatc ctacggcccc cacagccgga tcccctcagc cttccaggtc ctcaactccc 180
gcggacgctg aacaatggcc tccatggggc tacaggtaat gggcatcgcg ctggccgtcc 240
tgggctggct ggccgtcatg ctgtgctgcg cgctgcccat gtggcgcgtg acggccttca 300
tcggcagcaa cattgtcacc tcgcagacca tctgggaggg cctatggatg aactgcgtgg 360
tgcagagcac cggccagatg cagtgcaagg tgtacgactc gctgctggca ctgccgcagg 420
acctgcaggc ggcccgcgcc ctcgtcatca tcagcatcat cgtggctgct ctgggcgtgc 480
tgctgtccgt ggtgggggc aagtgtacca actgcctgna ggatgaaagc gccaaggcca 540
agaccatgat cgtggcnggc gtggggttcc tgttggcccg gccttntggt gatagngccg 600
ggtgtcc 607

<210> 901
<211> 807
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 17, 77, 330, 331, 337, 458, 479, 685, 731, 776, 803
<223> n = A,T,C or G

<400> 901
tagcgtttaa acttaanctt ggtaccgagc tcggatccct agtccagtgt ggtggaattc 60
tgcagatatc cagcacngtg gcggccgcgt cgacgcgacg gtagctctag ccgggcctga 120
gctgtgctag cacctccccc aggagaccgt tgcagtcggc cagccccctt ctccacggta 180
accatgtgcg accgaaaggc cgtgatcaaa aatgcggaca tgtcggaaga gatgcaacag 240
gactcggtgg agtgcgctac tcaggcgctg gagaaataca acatagagaa ggacattgcg 300
gctcatatca agaaggaatt tgacaagaan nacaatncca cctggcattg catcgtgggg 360
aggaacttcg gtagttatgt gacacatgaa accaaacact tcatctactt ctacctgggc 420
caagtggcca ttcttctgtt caaatctggt taaaagcntg gactgtgcca cacacccant 480
gatccatcca aaaacaagga ctgcagccta aattccaaat accagagact gaaattttca 540
gccttgctaa gggaacatct cgatgtttga acctttgttg tgttttgtac agggcattct 600
ctgtactagt ttgtcgtggt tataaaacaa ttagcagaat agcctacatt tgtatttatt 660
ttctattcca tacttctgcc acgtntgttt tctctcaaaa tccattcctt taaaaaataa 720
atcttgatgc ngatgtgaaa aaaaaaaaaa aaaaaaaagt tcaacccggc ccctcnagtc 780
taaaagggcc cgtttaaacc ccnctgg 807

<210> 902
<211> 568
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 271, 489, 551, 559
<223> n = A,T,C or G

<400> 902
gctgcggcgc agtctgcagc atggcgtacc cggggcatcc tggcgccggc ggcgggtact 60
acccaggcgg gtatggaggg gctcccggag ggcctgcgtt tcccggacaa actcaggatc 120
cgctgtatgg ttactttgct gctgtagctg gacaggatgg gcagatagat gctgatgaat 180
tgcagagatg tctgacacag tctggcattg ctggaggata caaacctttt aacctggaga 240
cttgccggct tatggtttca atgctggata nagatatgtc tggcacaatg ggtttcaatg 300
aatttaaaga actctgggct gtactgaatg gctggagaca acactttatc agttttgaca 360
ctgacaggag tggaacagta gacccacaag aattgcagaa ggccctgaca acaatgggat 420

ttaggttgag tccccaggct gtgaattcaa ttgcaaaacg atacagcacc aatggaaaga 480
tcaccttcna cgactacatc gcctgctgcg tcaaactgag ggctcttaca gacagctttc 540
gaagaccgga nactgctcna ccaaggtg 568

<210> 903
<211> 688
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 584, 593, 621, 644, 674
<223> n = A,T,C or G

<400> 903
ggcgtagcag agtggtcgtt gtctttctag gtctcagccg gtcgtcgcga cgttcgcccg 60
ctcgctctga ggctcctgaa gccgaaacca gctagacttt cctccttccc gcctgcctgt 120
agcggcgttg ttgccactcc gccaccatgt tcgaggcgcg cctggtccag ggctccatcc 180
tcaagaaggt gttggaggca ctcaaggacc tcatcaacga ggcctgctgg gatattagct 240
ccagcggtgt aaacctgcag agcatggact cgtcccacgt ctctttggtg cagctcaccc 300
tgcggtctga gggcttcgac acctaccgct gcgaccgcaa cctggccatg ggcgtgaacc 360
tcaccagtat gtccaaaata ctaaaatgcg ccggcaatga agatatcatt acactaaggg 420
ccgaagataa cgcggatacc ttggcgctag tatttgaagc accaaaccag gagaaagttt 480
cagactatga aatgaagttg atggatttag atgttgaaca acttggaatt ccagaacagg 540
agtacagctg tgtagtaaag atgccttctg gtgaatttgc acgnatatgc ccnagatctc 600
agccatattg gaagatgctg ntgtaatttc cttgtgcaaa agancggagt ggaaattttc 660
tggcaagtgg gaanaacttc ggaaatgg 688

<210> 904
<211> 857
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 1, 557, 599, 623, 673, 686, 701, 706, 710, 718, 723, 733,
746, 762, 764, 765, 779, 785, 787, 790, 796, 807, 842, 850
<223> n = A,T,C or G

<400> 904
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cttcgctggc agtctgaacg gcaagcttga gtcaggaccc ttaattaaga tcctcaattg 120
gctggagggc agatctcgcg agtagggcaa cgcggtaaaa atattgcttc ggtgggtgac 180
gcggtacagc tgcccaaggg cgttcgtaac gggaatgccg aagcgtggga aaaagggagc 240
ggtggcggaa gacgggggatg agctcaggac agagccagag gccaagaaga gtaagacggc 300
cgcaaagaaa aatgacaaag aggcagcagg agagggccca gccctgtatg aggacccccc 360
agatcagaaa acctcaccca gtggcaaacc tgccacactc aagatctgct cttggaatgt 420
ggatgggctt cgagcctgga ttaagaagaa aggattagat tgggtaaagg aagaagcccc 480
agatatactg tgccttcaag agaccaaatg ttcagagaac aaactaccac tgaacttcag 540
gaactgcctg gactctntca tcaatactgg tcagcttctt cggacaaaga aaggtacant 600
ggcgtgggcc ttcttttccc ccnatgcccc ctcaaagttc ttacgcatag gcaataagaa 660
cattatccgg aanggccggt gattgnggct gaatttactc ntttgngctn ggacaacntt 720
ttnccttatg ccnggcccag ggttgnccca attgaatccc gncnnccctt ggaaaaaanc 780
ctttncnaan ttcctnaagg gcctggnttt cccaaaaccc tttggtttgg ggggaacccc 840
antgggcctn aaaaaaa 857

<210> 905
<211> 780
<212> DNA
<213> Homo sapiens

<220>

<221> misc_feature
<222> 543, 545, 591, 643, 650, 655, 659, 716, 722, 725, 729, 757,
774
<223> n = A,T,C or G

<400> 905
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gattctcacc tcgtacagtt acgctctccc gcggcacgtc cgcgaggact tgaagtcctg 120
agcgctcaag tttgtccgta ggtcgagaga aggccatgga ggtgccgcca ccggcaccgc 180
ggagctttct ctgtagagca ttgtgcctat ttccccgagt ctttgctgcc gaagctgtga 240
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attacccgga atctggatgg gaccgcctcc gggagctgtt tggcaaagat gaacagcaga 360
gaatttcaaa ggaccttgct gatatctgta agacggcagc tacagcaggc atcattggct 420
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aggcagaaat ttatcataac ccggtttgat gctgtgcaat cttgcacatc gtgcttgccc 540
acnangcttc attcgttatt ggcttggcgc ttggggttgg agaacttgca ntggtttgtg 600
actatattca acacagtgaa cactagtctt gaatgtatac ccnaataaan atgcntaanc 660
cattttgtaa ttcaggactt gtcacgggaa gttttttagg ataacctagg ctgctngcct 720
gnggntggng cataatggac cttcttggcc ttctttngaa gctgttatgc attnaaaatc 780

<210> 906
<211> 998
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 734, 759, 784, 814, 819, 839, 850, 857, 865, 866, 871, 892,
893, 895, 909, 910, 932, 941, 963, 980
<223> n = A,T,C or G

<400> 906
gcgttaaact taagcttggt accgagctcg gatccctagt ccagtgtggt ggaattctgc 60
agatatccag cacagtggcg gccgcttcga caagcggtgg tttttagcgg ctctctgggt 120
agcagggtgg tgtgatagcg gcagcgaggg gctcggagag gtgctcggat tctcgtagct 180
gtgccgggac ttaaccacca ccatgtcgag caaaagaaca aagaccaaga ccaagaagcg 240
ccctcagcgt gcaacatcca atgtgtttgc tatgtttgac cagtcacaga ttcaggagtt 300
caaagaggcc ttcaacatga ttgatcagaa cagagatggt ttcatcgaca aggaagattt 360
gcatgatatg cttgcttcat tggggaagaa tccaactgat gagtatctag atgccatgat 420
gaatgaggct ccaggcccca tcaatttcac catgttcctc accatgtttg gtgagaagtt 480
aaatggcaca gatcctgaag atgtcatcag aaatgccttt gcttgctttg atgaagaagc 540
aactggcacc atacaggaag attacttgag agagctgctg acaaccatgg gggatcggtt 600
tacagatgag gaagtggatg agctgtacag agaagcacct attgataaaa aggggaattt 660
caattacatc gagttcacac cgcatccttg aaacatggga gcccaaagac aaaggatgac 720
ttgaaataac ttcnaatttc aacccaacct ttcctttgnt ggccccttt gggtatttct 780
tgangaattt tcttctttgc atgcccctt aacnttttnc aagcttttt ggcattttnc 840
cctggtgggn atttaanttc ttccnnccca ntttttgggg ccataatggg annenttta 900
ttaaatcann acttgggaaa aaccggggaa cnttttttt nttaaaaaat caattttttc 960
ccnaaaatta aaaaaaattn ggggttaaat tttaaacc 998

<210> 907
<211> 759
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 58, 713, 746
<223> n = A,T,C or G

<400> 907

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aaatgtagta gatgctatta gcgcttgtca gagaggtggt tttcttcaat cagtacaaag 120
tactgagaca atggttaggg ttgttttctt aattcttttc ctggtagggc aacaagaacc 180
atttccaatc tagaggaaag ctccccagca ttgcttgctc ctgggcaaac attgctcttg 240
agttaagtga cctaattccc ctgggagaca tacgcatcaa ctgtggaggt ccgaggggat 300
gagaagggat acccaccacc tttcaagggt cacaagctca ctctctgaca agtcagaata 360
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ttgcaaccta gcctcaccca agaagactgg aaagagacat atctctcagc tttttcagga 480
ggcgtgcctg ggaatccagg aactttttga tgctaattag aaggcctgga ctaaaaatgt 540
ccactatggg gtgcactcta cagtttttga aatgctagga ggcagaaggg gcagagagta 600
aaaaacatga cctggtagaa ggaagagagg caaaggaaac tggggtgggg aggatcaatt 660
agagaggagg ccctgggatc caccttcttc cttaggtccc ctcctccatc agncaaggag 720
ccttctctaa tcatgccctc ccgaanactg ggctgggga 759

<210> 908
<211> 865
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 486, 529, 574, 585, 595, 599, 612, 647, 653, 655, 660, 666,
681, 702, 703, 706, 709, 711, 713, 728, 729, 743, 748, 756,
759, 761, 766, 769, 780, 782, 798, 803, 825, 855
<223> n = A,T,C or G

<400> 908
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aagtcatcgc tgacaggaca gtctttttca gttattgctt ttgtcgcttg tttcttgaga 180
acatgactcc aataaggctc atggctgcca agcccattcc tgcaacgctt gcagcgatga 240
tgacatctct gacctggtca ctgcgggcga ctccatagcg cagctcattc acaaagtgct 300
cgcagttctc actggtcagc ttgtagagca cctcctgccc accagctcct ccgcccgctg 360
gatgattttg ctgcagggca gcggcgaagt acttgtcatc atgtttggtg gtgacctggt 420
acttgcactc ccggcccatc atacagcaat tccttcttta cgaagggcct tgtcaagtca 480
agggcnggac atgaacactt ggctggaccc acttcctggg gaacctccnt tggaaggggc 540
cagatgaaac cccatatcct tcgcccacca taanaatggg cccantggct tgtanaaang 600
ggcgaaaaaa tntcaatcag ggcttccagc cttaaggttt tggaaanggg ccncnccatn 660
ttcccncccg ggggggaccc ncaaggccag cctcaatttc cnnggnaant ntntgaggca 720
gggggacnng ggattattgg gcnttaanag ggaaantgng nttccnaanc cccgggaatn 780
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cctttaaaaa ttttntccgg ggccc 865

<210> 909
<211> 1080
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 4, 402, 486, 508, 533, 542, 550, 561, 603, 638, 643, 646,
650, 657, 667, 677, 725, 736, 741, 744, 750, 767, 777, 785,
788, 796, 803, 836, 863, 866, 869, 882, 892, 895, 910, 916,
922, 924, 937, 948, 965, 980, 990, 995, 996, 1010, 1013
<223> n = A,T,C or G

<221> misc_feature
<222> 1017, 1019, 1020, 1027, 1076, 1077
<223> n = A,T,C or G

<400> 909
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cgcagccacc gccgccgccg ccgcctctcc ttagtcgccg ccatgacgac cgcgtccacc 180
tcgcaggtgc gccagaacta ccaccaggac tcagaggccg ccatcaaccg ccagatcaac 240
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gcttgagaaa actgatgaag cttgcagaac caacgaggtg gnccgaatct tcctttaagg 420
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caaatnggaa gtggtggcaa tttaccantt ttgggaaaaa aaaaaatggt ggnaaattca 540
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<210> 910
<211> 439
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 1, 438, 439
<223> n = A,T,C or G

<400> 910
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gacaaaccag acatggggga aatcgccagc ttcgataagg ccaagctgaa gaaaacggag 120
acgcaggaga agaacaccct gccgaccaaa gagaccattg agcaggagaa gcggagtgaa 180
atttcctaag atcctggagg atttcctacc cccgtcctct tcgagacccc agtcgtgatg 240
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ctccgcgccg atgccaccgg cctgtgggtc tctgaaggga cccccccccca atcggactgc 360
caaattctcc ggtttgcccc gggatattat agaaaattat ttgtatgaat aatgaaaata 420
aaacacacct cgtggcann 439

<210> 911
<211> 718
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 1, 3, 590, 624, 642, 680, 713
<223> n = A,T,C or G

<400> 911
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cccctgcgtc ccgctccctc ctagccgact cagagcacaa gaaggattgc cacggtttcc 180
attgcagcag ccgtggcgcc tctgaccctt tttttatatc gcggcgacgg cgggctgtcg 240
tcacgacgac gtgcggacgc agcggcgggg gcctttcagc ttatgtggag aagtcgcttg 300
tgaagccacc tataaatcca tttactgaat ttatggagaa ggctgtaaat gatggaagtc 360
attcagaaga actcttttgc catcttaaaa ctatatcaga gaaagaagat ttaccacggt 420
gtaccagtga aagtcatctc agctggtatt ctcatcaagt atcaggggaa atctaaattt 480
ccgattctag gatttcctgt tttgctataa tataaattat ttgaatcaaa tacagcattc 540
ttttaagagt atcttttcca aatctagaat taattaatta aaatatattn aatctgataa 600
caagggactc atctaccaga attnactagt ttttttgaa tnttatgaaa caattaaaat 660
gaaaacttgc cggccccaan gaacatgcct ggaatcccac cttttgggag gantaagg 718

<210> 912
<211> 791
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 628, 662, 677, 703, 715, 741, 785, 786
<223> n = A,T,C or G

<400> 912
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tcggactgcc ccaaggcccc cgccgccgct ccagcgccgc gcagccaccg ccgccgccgc 180
cgcctctcct tagtcgccgc catgacgacc gcgtccacct cgcaggtgcg ccagaactac 240
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aaatactttc ttcaccaatc tcatgaggag agggaacatg ctgagaaact gatgaagctg 420
cagaaccaac gaggtggccg aatcttcctt caggatatca agaaaccaga ctgtgatgac 480
tgggagagcg ggctgaatgc aatggagtgt gcattacatt tggaaaaaaa tgtgaatcag 540
tcactactgg aactgacaaa ctggccactg acaaaaatga cccccatttg tgtgacttta 600
ttgagacaca ttaccttgaa tgaagcangg tgaaaagcat caaaaaaatt gggtgaacac 660
cntgaaccca acttgcncca agaatgggaa gcgcccccaa atnttggctt tgggngggaa 720
aattcttttt ttggaccaag ncaccacccc ttggggaaaa aaaagtggaa ttaattggaa 780
aaagnnttaa a                                                      791
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<210> 913
<211> 660
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 550, 555, 562, 570, 572, 584, 613, 637
<223> n = A,T,C or G

<400> 913
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acccgtaacc caccgccatg gccgaggaag gcattgctgc tggaggtgta atggacgtta 120
atactgcttt acaagaggtt ctgaagactg ccctcatcca cgatggccta gcacgtggaa 180
ttcgcgaagc tgccaaagcc ttagacaagc gccaagccca tctttgtgtg cttgcatcca 240
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acctaattaa ggttgatgac aacaagaaac taggagaatg ggtaggcctt tgtaaaattg 360
acagagaggg gaaaccccgt aaagtggttg gttgcagttg tgtagtagtt aaggactatg 420
gcaaggagtc tcaggccaag gatgtcattg aagagtattt caaatgcaag aaatgaagaa 480
ataaatcttt ggctcacaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 540
aaaaaggggn ggccnccact gngctggatn tntgcaaaat tccncccact ggactagggg 600
atccgagctc ggncccaagc ttaagtttaa accctancca gctggggtct ccctataggg 660
```

<210> 914
<211> 838
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 92, 756, 775, 802, 806
<223> n = A,T,C or G

<400> 914

gtcgacctaa cgcagccatg gctcgtggtc ccaagaagca tctgaagcgg gtggcagttc 60
caaagcattg gatgctggat aaattgaccg gngtgtttgc tcctcgtcca tccaccggtc 120
cccacaagtt gagagagtgt ctccccctca tcattttcct gaggaacaga cttaagtatg 180
ccctgacagg agatgaagta aagaagattt gcatgcagcg gttcattaaa atcgatggca 240
aggtccgaac tgatataacc taccctgctg gattcatgga tgtcatcagc attgacaaga 300
cgggagagaa tttccgtctg atctatgaca ccaagggtcg ctttgctgta catcgtatta 360
cacctgagga ggccaagtac aagttgtgca aagtgagaaa gatctttgtg ggcacaaaag 420
gaatccctca tctggtgact catgatgccc gcaccatccg ctaccccgat cccctcatca 480
aggtgaatga taccattcag attgatttgg agactggcaa gattactgat ttcatcaagt 540
tcgacactgg taacctgtgt atggtgactg gaggtgctaa cctaggaaga attggtgtga 600
tcaccaacag agagaggcac cctggatctt ttgacgtggt tcacgtgaaa gatgccaatg 660
gcaacagctt tgccactcga ctttccaaca tttttgttat tggcaagggc aacaaaccat 720
ggatttctct tccccgagga aagggtatcc cgctcnccat tgcttgaaga gaganacaaa 780
agactggcgg gccaaaccag ancagngggg ggaaatgggg gccctggggg acatgtca 838

<210> 915
<211> 691
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 4, 5, 400, 443, 526, 552, 554, 566, 594, 613, 614, 627, 638, 644, 645
<223> n = A,T,C or G

<400> 915
tttnnacctg cactcggatg ttgaccgggg agagagctgc accaagtacc tgttgaccgg 60
ggagggggca ggcaccgtat ttgtgattga tgaggccaca ggcaatattc atgttaccaa 120
gagccttgac cgggaggaaa aggcgcaata tgtgctactg gcccaagccg tggaccgagc 180
ctccaaccgg cccctggagc ccccatcaga gttcatcatc aaagtgcaag acatcaacga 240
caatccaccc atttttcccc ttgggcccta ccatgccacc cgtgccccga gatgtccaat 300
gtcgggacat cagtgatcca ggtgactgct cacgatgctt gatgacccca gctatgggaa 360
cagtgccaag cttggtgtac actgttctgg atggacttgn ctttcttctc ttgtggaccc 420
ccaactggag tggtgcgtac agncatcccc aacatggacc gggagacaca ggaggagttc 480
ttggtggaga tccaggccaa ggacatgggc ggccacatgg gggggntgta aggcagaact 540
acggggactg tncnctcagc gatgtnaaca acaacccccc caagttccca caanagccta 600
tcccagtttt ccnnggggga aaacagntgg acctggcncc ttgnngggcc ggttccgggc 660
ccagaaccca aacttggggg acaaaccccc t 691

<210> 916
<211> 887
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 1, 487, 502, 589, 605, 613, 629, 632, 643, 649, 663, 681, 687, 700, 714, 720, 724, 726, 729, 737, 740, 742, 760, 762, 778, 780, 784, 805, 810, 815, 817, 823, 825, 886, 887
<223> n = A,T,C or G

<400> 916
nctttttttt ttttttttgg gatatgacct ttattgaact tatccaccag agtggaaata 60
atgtctgtac aaaaccaaat gtttgttact ataacttctg catcacaatt aaaatccaaa 120
cagtttttta aaaacagtca actcaatcaa aacccactac ttcagaatca atagcttctt 180
tgaagccaca gtaacactta aatatggtta agactcgaat gcagaaattt ggttggttgg 240
aaagctaatt aaacttccaa cttgctcaaa tagaattaca aaaaggcaaa attgtgtttt 300
tcacagagat acagtccact ggaatcacca acactggaca gctgttagag tatttagagt 360
cctgagataa caaggaatcc aggcatcctt tagacagtct tctgttgcct ttcttcccaa 420
tcagagattt gtggatgtgt ggaatgacac caccaccagc caattggtag ccttgatgag 480
agaaatncaa attcttcatc tncaccaaat agcaaagttg caagtggacg aaggggtaat 540

acgcttttac ctttaagtct tttggatgca atttcctgcc agtcaaganc ctttgcgggg 600
agganctcca gantggttgc cttgtacana gnggaagtcg cgncccccnc gtccttgact 660
ggnggcctaa atttagggc natgaanccg gcccttggn actggcaagc cggnttttn 720
gcancnggna aaccccnttn tntttggctt ttccgggagn cntttcccgc cttccccncn 780
gccnttttca aattccctg aaacntcaan ccaancnagg ggngnaaaa aaagggttaa 840
ttgggccccc ccggggggaa acccccccc ccccctcttt tttttnn 887

<210> 917
<211> 606
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 485, 509, 525, 532, 547, 580, 595
<223> n = A,T,C or G

<400> 917
ttcgacccta gttccggcca gggtcgcccc ggcaaccacg agcccagcca atcagcgccc 60
cggactgcac cagagccatg gtcggcagaa gagcactgat cgtactggct cactcagaga 120
ggacgtcctt caactatgcc atgaaggagg ctgctgcagc ggctttgaag aagaaaggat 180
gggaggtggt ggagtcggac ctctatgcca tgaacttcaa tcccatcatt tccagaaagg 240
acatcacagg taaactgaag gaccctgcga actttcagta tcctgccgag tctgttctgg 300
cttattaaaa aaggcatctt gaaccccaga aatttgtggg ttgaacaaaa agaaactgga 360
aagccgcaga actttgtgat attccagttc cccttgcagt gggtttggaa gtccttgcct 420
ttcttgaaaa gggttggttt tgaagcgaag tggttcatta gggagaagtt tgcttaccac 480
tttancgctt gccatgtatt gaacaaaang gacctttccg gagtnaagaa anggcagtgg 540
ttttccntca ccacttgggg gaaggggttc cttgtacttn tttgcaaggg aatcnccggg 600
gaacat 606

<210> 918
<211> 809
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 1, 3, 568, 580, 604, 606, 610, 632, 662, 665, 691, 719, 729, 734, 746, 781, 783
<223> n = A,T,C or G

<400> 918
ntnttttttt tttttttgc aaataaaact ggctaagttg gttgcttttt ggtgattagt 60
caaagagacc aaatcccata tcctcgtccg actcctccga ctcttccttg gcttcaacct 120
tagctggggc tgcagcagca gcaggagcag ctgtggtggc agcagccaca ggggcagcag 180
ccacaaaggc agatggatca gccaagaagg ccttgacctt ttcagcaagt gggaaggtgt 240
aatccgtctc cacagacaag gccaggactc gtttgtaccc gttgatgata gaaaggggta 300
ctgatgcaac agttgggtag ccaatctgca gacagacact ggcaacattg cggacacccct 360
ccaggaagcg agaatgcaga gtttcctctg tgatatcaag cacttcaggg ttgtagatgc 420
tgccattgtc gaacacctgc tggatgacca gcccaaagga gaaaggggga gatgttgagc 480
atgttcaaca gcgtggcttc ctggctccca cttttgcttc cagtcttgat cagctgccat 540
cactcaagaa ttcaatgggg ccctgganaa tttaagtggn gatcctaaaa cctggaaaaa 600
agangncttn ttcggcccca aaaccaatgg tnttgggttg gacagggact ttacattggg 660
cnatngcacc acaccggcaa cacttgcacc ntttggcaa caactgtcct taactcaang 720
agggcctcnt gggnaccaaa cccttncccc gaataaggaa cagttttcaa atggtgtttc 780
ngngcctcga tgctcctatg ggtttgcct 809

<210> 919
<211> 830
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 4, 493, 501, 514, 547, 577, 584, 590, 609, 625, 633, 645, 649, 654, 656, 664, 666, 681, 686, 687, 732, 746, 752, 758, 759, 764, 765, 767, 772, 773, 777, 778, 779, 788, 817
<223> n = A,T,C or G

<400> 919
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ggctgccaga ccatgctgag tggagcacgc tgcaggctcg cctcagcgct gcggggaacg 120
cgcgcgccgc cgtccgcggt cgcccgtagg tgcctgcacg cgtcggggtc gcggcctttg 180
gccgaccggg gcaagaagac tgaggagccg ccccgcgact tcgatccggc gctgctggag 240
ttcctggtgt gcccgctctc caagaagccg ctcagatatg aagcatcaac aaacgaattg 300
attaatgaaa gagttgggaa tagcttatcc aatcattgat gggatcccta atatgatacc 360
acaggcagct aggatgacac gtcaaagtaa agaaagccaa gaaagaaagt ggaaccagcg 420
cttagtttca ttaattttaa aaaaaaatta aaaaaaaaac cgccaacaag cccaaacttt 480
tttctttaat tancccatta ntacccсttt tttnaaaaaa cacaaagtgg gggcaagggt 540
aaaattnaaa gttgggggaa aagaaaaaaa agaaaanggg tttncttggn cttcttttcc 600
cttacccgnt tgggaacctg ggttnctttt aanttccccc ccttngggnt tttncntttt 660
ttananccaa ggggaaactt nggttnntta acctttcaaa gcccttttttt tgtgggggaa 720
aaaaaaaaaa cnttttcccc ccccangggg gnttgccnnc ttanncncca anncccnnnc 780
ctttttgntt tttaccaagc cttggttttt tggcctntta ccccttccca            830
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<210> 920
<211> 287
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 1
<223> n = A,T,C or G

<400> 920
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nctttttttt ttttttttcgg atgcaaacag caaaaggctt tattgggaac acgggtaccc 60
gggcgactca gtctatcgga tgactggcgc accgagtgtg ggtttttac cctttttata 120
gggctgggga gcaaaaagcg cggttacaga agcgagaagc gagctgattg gttagtttaa 180
ataaggcttg ggttttttcc cggtcttttg gggaacttga aactgaggtg ggactttcca 240
gaaactgttg ctagtttcgc tttatctgag taccatctgt tgtcgac               287
```

<210> 921
<211> 926
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 446, 454, 522, 532, 541, 567, 579, 585, 594, 640, 650, 654, 658, 700, 724, 751, 771, 773, 776, 777, 778, 828, 829, 830, 831, 832, 846, 854, 867, 869, 894, 902
<223> n = A,T,C or G

<400> 921
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cctttttttt tttttttgac tgtcctaaat tgtttattaa gtatgaattt tacaaacttt 60
acttatatta gcggtaacgg tggagctgga gagtattgcg ccttctccaa gctgcccggc 120
gagagccacc aatagtgtgg tggaacttgt ggccctttcc aaggccacgg ctctttcggc 180
ctgcagatgt cagcccacgc atctccctgt gcttgtggac tggtttggtg atccactggg 240
tgtcaggatt tcttctgata gctttatgga atggatcaat gaggataacc tcaaaaaaat 300
ttgattgtgg gaatctttca cccaccccag taaagaaatt caagggaact tcttcaaaag 360
cccccccaag tgggcggtcc aagcttcgct tccttcttgg caaacgggaa cttggaaagg 420
gcttttcgaa gccaaaacct tttaanccttt gggnttaaac cacccattgg aatggggaac 480
aagggctttg gcccggtaaa ggtttggcca cccccttttta anggaaaact tnggggccgg 540
```

```
nttttttccg ggcccacccc ccggggngga aaaccaccna aaatnccttta ttanttttta 600
aaccccgtaaa cccctttgct ttgggggccc ttttgtaaan ccccccaaan tccngggngc 660
cgccttttta attcaagggc ccccggggtt gggggggccn gggggaaaac ccccctttttg 720
gggnaaaaaa ccaaaaaaaa aacctttggg ngggggaacc ttgggccaaa ncnaannngg 780
gggacccccct tttaaaaaaa aaaaaaaaac cccccattgg aacaattnnn nnaaactggg 840
gttttntttt tttnttcccc cttaaancnt tccccctggg gaaaggggaa cccnttgggg 900
antgggcccc ccccccttt tttttt                                        926

<210> 922
<211> 836
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 53, 54, 735, 739, 744, 752, 755, 757, 781, 829, 836
<223> n = A,T,C or G

<400> 922
aactcttcag tatgtggcag aatcctgcac agtctgtgct caagtaaatg ttnntaaagc 60
caaaatcggg gcaggggtac gagtacgcgg acatcgacca ggtacccatt ggaaaattaa 120
cttcactgaa gttaaaccag ggctgtacgg gtacaagtac ctcctggtgt tcgtagacac 180
cttctctagc tgggtgaaag ccttcccaac taaacgtgaa actgccaagg ttgtgaccaa 240
gaagctatta aaagaaatat tcccaagatt cgggatgcca caggtattgg gttccgataa 300
tgggcctgcc ttcgtctccc aggtaagtca gtcggtggcc gatttactgg ggatcgatta 360
gaaattacat tgtgcttata gaccccagag ttcaggtcag gtaaaaaaaa ataataaaac 420
catcaagaag actctaacta aattaacgct tgcagctggc actagagact gggtactcct 480
actcccctta gccctctacc gagcccggaa cactccgggc ccccatggac taactccgta 540
taaaattctg tatggggcac ccccgcccct tgtcaatttt catgatcctg aaatgtcaaa 600
gttaactaat agtccctctc tccaagctca cttacaggcc ctccaagcag tacaacgaga 660
ggtctggaag ccgcttggcc gtgcttatca ggaccagcta aatcagccag taatccacac 720
cccttccgtg tcggngacnc ccgngtagga cnccngnacc agactaaaac ttggaacctc 780
nctggaaagg accttcaccg tctggtgacc cccccccccg ttttaaagng acgggn      836

<210> 923
<211> 714
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 1, 390, 440, 452, 462, 472, 477, 489, 501, 555, 556, 568,
602, 610, 636, 643, 654, 675, 710
<223> n = A,T,C or G

<400> 923
nctttttttt tttttttttg ggatatgacc tttattgaac ttatccacca gagtggaaat 60
aatgtctgta caaaaccaaa tgtttgttac tataacttct gcatcacaat taaaatccaa 120
acagtttttt aaaaacagtc aactcaatca aaacccacta cttcagaatc aatagcttct 180
ttgaagccac agtaacactt aaatatggtt aagactcgaa tgcagaaatt tggttggttg 240
gaaagctaat taaacttcca acttgctcaa atagaattac aaaaagggca aaattggtgg 300
tttttcacca gagaatacca ggtcccctgg gaaatcaccc aacacctggg acaagcttgg 360
ttaggaagta ttttaagaag tcccttggan gaataaacca aggggaaatc ccagggccat 420
tcccttttta agaacaaggn ccttttcttg gnttgggccc cnttttcttt tnccccnaaa 480
tccaagaang aaatttttgg ngggggaatg gttggtgggg gaaaatggaa ccaaccccac 540
ccccaccccca agggnnaaat tttgggtnaa gccccctttt gaattggaaa gaaagaaaaa 600
tnccccaaan tttcttttc aattctttcc cccccnaaaa atnaggccaa aggntttggc 660
caaaagtggg aaccnaaggg gggggaaaaa accccttttt tccctttttn aaag       714

<210> 924
<211> 991
<212> DNA
```

<213> Homo sapiens

<220>
<221> misc_feature
<222> 1, 400, 429, 467, 498, 501, 529, 530, 531, 534, 539, 545,
557, 581, 588, 614, 626, 632, 655, 665, 680, 701, 706, 708,
728, 752, 778, 785, 787, 799, 801, 823, 830, 835, 837, 840,
853, 857, 862, 863, 869, 892, 908, 919, 920, 921, 929
<223> n = A,T,C or G

<221> misc_feature
<222> 930, 938, 963, 968
<223> n = A,T,C or G

<400> 924
ntcgactcct cttccacccc tgccaggccc agcagccacc acagcgcctg cttcctcggc 60
cctgaaatca tgcccctagg tctcctgtgg ctgggcctag ccctgttggg ggctctgcat 120
gcccaggccc aggactccac ctcagacctg atcccagccc cacctctgag caaggtccct 180
ctgcagcaga acttccagga caaccaattc caggggaagt ggtatgtggt aggcctggca 240
gggaatgcaa ttctcagaga agacaaagac ccgcaaaaga tgtatgccac catctatgaa 300
ctgaaagaaa gacaagaact acaatggtca ccttccgtcc ttgtttaagg aaaaaaagaa 360
agtggtgaac ttacctggga atcaagggaa ctttttggn ttcccaaggg ttttggccca 420
agccccccng ggcggaagtt ttcaacgcct tgggggccaa aaccaanttt aaaagaaaag 480
ttttaacccc ccttgggnaa nttaaaaccg gaaagtttta accccttttnn nttnccccna 540
aattnggggt gggaaancca cccccaaacc tttaccaaaa ncccaagnca attggcctta 600
ttgggggggg gttnctttc aaaaanaaaa angtttttct ttcaaaaaaa acaangggga 660
agttnccttt ttaaaggaan cacccccttt ttaccgggga ngaaancnaa agggagcttg 720
acttttcngg aaacttaaag gagaaaattt anttcccttt tttccaaaat ttttgggnct 780
tcctngnaaa acccaattng ntttcctttt cccaatgaac cangtatttn accgntnaan 840
gcacaagggg ccnccanttt cnnaccaanc ccaaaaacct ttaagggaat tnggaaacct 900
tccccaangg cccccttgnn ntggttccnn gccccccnct tatgggcccc ctttttgtt 960
aanaaaantg cctcggaaaa aaaaaaaaag g 991

<210> 925
<211> 704
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 164, 216, 270, 379, 429, 431, 436, 470, 471, 472, 495, 500,
540, 562, 567, 582, 583, 587, 606, 640, 644, 645, 654, 672,
673
<223> n = A,T,C or G

<400> 925
ttttacaaga actatggggc cttcccagca tttgactgtt cattgcatag aatgaattaa 60
atatccagtt acttgaatgg gtataacgca tgaatatttg tgtgtctgtg tgtgtgtctg 120
agttgagaga ttttattagg ggcatctgcc aattctctca ctgnggttcc ttctctgact 180
ttgcctgttc atcatctaag gaggctagat ccttcnctga cttcaccatt cctcaaacct 240
gtaagtttct cacttcttcc aaattggctn tggctctttc tgcaaccttt ccattcaaga 300
gcaatctttg ctaacgagta agtgaatgtg aagagtacca actacaacaa ttctacagat 360
aattagtgga ttgtgttgnt tgccgagagt gaaggtttct tggcatctgg tgcctgatta 420
aggcttgant nttaanсctc acatatctct ctataggctt gactcgagtn nngctgcatt 480
ttctatgtgc tgacngactn ggagacttaa agtaatcgac tatgccacct tggggtgggn 540
accagaatac ttcccaccac anggttnaaa gggagagcaa annсttntgg ataaacccct 600
cctttntttt ggggacacat ggctctcctt gaaaaacccn cctnngcctg aatntccaca 660
tgggtcacta anncatgtta ttccttaacc cccctattgc ctga 704

<210> 926
<211> 591
<212> DNA

<213> Homo sapiens

<220>
<221> misc_feature
<222> 1, 2, 488, 526, 571, 582
<223> n = A,T,C or G

<400> 926
nnttggaagt gacatcgtct ttaaaccctg cgtggcaatc cctgacgcac cgccgtgatg 60
cccagggaag acagggcgac ctggaagtcc aactacttcc ttaagatcat ccaactattg 120
gatgattatc cgaaatgttt cattgtggga gcagacaatg tgggctccaa gcagatgcag 180
cagatccgca tgtcccttcg tgggaaggct gtggtgctga tgggcaagaa caccatgatg 240
cgcaaggcca tccgagggca cctggaaaac aacccagctc tggagaaact gctgctcata 300
tccgggggaa tgtgggcttt tgtgttcacc aaggaggacc tcactgagat cagggacatg 360
ttgctggcca ataagggtgc cagcttgctt gcccgtgctg gtgccaattg gcccattgtg 420
aaagtcactt gtgccagccc aagaacactt ggtcttcggg ccccgaaaaa gaaccttcct 480
tttttccngg cttttaaggg tattcaccca cttaaaaatc ttccangggg gcacccattt 540
gaaaattcct tgaagtggaa tggtgccaac nttgaatcaa anaacttgga a 591

<210> 927
<211> 903
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 1, 273, 484, 617, 627, 634, 637, 660, 729, 742, 764, 775,
779, 808, 834, 851, 885, 896
<223> n = A,T,C or G

<400> 927
ntcgacccga gagtcgtcgg ggtttcctgc ttcaacagtg cttggacgga acccggcgct 60
cgttccccac cccggccggc cgcccatagc cagccctccg tcacctcttc accgcaccct 120
cggactgccc caaggccccc gccgccgctc cagcgccgcg cagccaccgc cgccgccgcc 180
gcctctcctt agtcgccgcc atgacgaccg cgtccacctc gcaggtgcgc cagaactacc 240
accaggactc aagaggccgc catcaaccgc canatcaacc tggagctcta cgcctcctac 300
gtttacctgt ccatgtctta ctactttgac cgcgatgatg tggctttgaa gaacttttgc 360
caaaatactt tcttcaccaa tctcaatgag gaagaaggga aacaatgctt gaagaaaact 420
tgatgaaagc ttgcaagaaa ccaaacgaag ggtgggcccg aaatcttttc ctttcaagga 480
atantcaaag gaaaacccaa gaacttggtg gaatggaact tgggggaaga agccggggcc 540
tttgaaaatg gccaaattgg gaagttggtg gccatttaac aatttttggg gaaaaaaaaa 600
aaatgggtgg aaaattnaag ttcaacntta cttnggnaaa cttggcaacc aaaaaacttn 660
gggcccacct tgaaccaaaa aaaattggaa acccccccat ttttgggggg ggaacttttc 720
attttgaana acaccatttt anccttgaat tgaaacaagg gggnaaaacc ctttnaaana 780
aaattggggg gaacaccttg aacccacntt gcgccaaaaa atgggaacgc cccnaatttg 840
ggttgggggg natatttttt ttaaaaacac acccttggaa aaaangataa tgaaantaac 900
ctc 903

<210> 928
<211> 747
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 1, 3, 495, 524, 575, 577, 578, 579, 580, 581, 582, 583, 584,
586, 589, 591, 593, 594, 595, 596, 597, 598, 599, 600, 601,
602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613,
614, 615, 616, 617, 618, 619, 620, 621, 622, 623
<223> n = A,T,C or G

<221> misc_feature

<222> 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 672, 677, 678, 695, 738, 741
<223> n = A,T,C or G

<400> 928
ntngaccgcg gaggaaacgg gagtgaacgg agagcgtagt gaccatcatg agcctcctca 60
acaagcccaa gagtgagatg accccagagg agctgcagaa gcgagaggag gaggaattta 120
acaccggtcc actctctgtg ctcacacagt cagtcaagaa caatacccaa gtgctcatca 180
actgccgcaa caataagaaa ctcctgggcc gcgtgaaggc cttcgatagg cactgcaaca 240
tggtgctgga gaacgtgaag gagatgtgga ctgaggtacc caagagtggc aaggggcaag 300
aagaaatcca agccagtcaa caaagacccg ctacatcttc aaagatgttt ccttgcgcgg 360
gggacttcaa gtcattcgtt ggtcccttgc cgggaaaccc cgcttcattc gcccgggcaa 420
agttaagggg gcccgcccct tgtcttgttt gaccaagaaa ccttcacctt cccttcttgg 480
tcccttattt gaaangaacc cgctttggcc cattttgggt tggnttggag gaaatttatt 540
taaaaggcct tcttgggggg tttttttttt tcttnannnn nnnnanaana nannnnnnnn 600
nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnannnnnn nnnnnnnnnn nnnagggggg 660
ggggggcccc cnttttnnaa aattttttta aaaangggc cccccctttt ttaaaaaacc 720
ccccccttg taaaaaanaa nccttt 747

<210> 929
<211> 754
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 133, 310, 470, 511, 514, 522, 531, 532, 557, 572, 599, 604, 614, 618, 627, 632, 639, 643, 652, 654, 659, 664, 680, 681, 682, 688, 730, 746
<223> n = A,T,C or G

<400> 929
cctttttttt tttttttttt ttataaagca taataaattt tattttttgg aaatggaaaa 60
atgtccctga atagttagat gtacctttta gtagtaatgt ctaataataa ataagaaatc 120
aattttataa ggnccatata gctgtattaa ataattttta agtttaaaag ataaaatacc 180
atcattttaa atgttggtat tcaaaaccaa agatataacc gaaaggaaaa acagatgaga 240
cataaaatga tttgcaagat gggaaatata gtagtttatg aatgtaaatt aaattccagt 300
tataatagtn ggctacacac tctcactaca cacacagacc ccacagtcct atatgccaca 360
aacacatttc cataacttga aaatgagtat tttgcatatc tcagttcagg gatatgtttt 420
ttacaagtta atcctaaagt cataaagcaa gaagcttttc atagtacagn attttattgc 480
taagctttac aaattaaact ctaaaaaatt nttncaatga tnctgaaaga nnttttattg 540
gccttttaaa agacaanccc aaatgagaat tntcttattt agaaaattaa ctttgaaant 600
tttnttaatt gaantaantt tattttntaa tncaatctnt tcntgcaaaa tntnttaana 660
gggncaatcc taaaaatgcn nnttcccntt tgaaaaccct aaaactagat tgcccttaaa 720
acaaaatttn tttttttttt aaaggncatt tggg 754

<210> 930
<211> 693
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 4, 5, 82, 317, 605, 683, 693
<223> n = A,T,C or G

<400> 930
tacnngacgc tacttcccct atcatagaag agcttatcac ctttcatgat cacgccctca 60
taatcatttt ccttatctgc tncctagtcc tgtatgccct tttcctaaca ctcacaacaa 120
aactaactaa tactaacatc tcagacgctc aggaaataga aaccgtctga actatcctgc 180
ccgccatcat cctagtcctc atcgccctcc catccctacg catcctttac ataacagacg 240

aggtcaacga tccctccctt accatcaaat caattggcca ccaatggtac tgaacctacg 300
agtacaccga ctacggngga ctaatcttca actcctacat acttccccca ttattcctag 360
aaccaggcga cctgcgactc cttgacgttg acaatcgagt agtactcccg attgaagccc 420
ccattcgtat aataattaca tcacaagacg tcttgcactc atgagctgtc cccacattag 480
gcttaaaaac agatgcaatt cccggacgtc taaaccaaac cactttcacc gctacacgac 540
cggggggtata ctacggtcaa tgctctgaaa tctggtggag caaaccacag tttcatgccc 600
atcgncctag aattaattcc cctaaaaatc tttgaaatag gggcccgtat ttacccctat 660
aggcaccccc ttttaccccc ttntagaggc ccn 693

<210> 931
<211> 375
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 7, 60, 352, 369
<223> n = A,T,C or G

<400> 931
gtcgacngct ccgtggttct ggcctacagt ggcggcctgg acacctcgtg catccttttn 60
tggctgaagg aacaaggcta tgacgtcatt gcctatctgg ccaacattgg ccagaaggaa 120
gacttcgagg aagccaggaa gaaggcactg aagcttgggg ccaaaaaggt gttcattgag 180
gatgtcagca gggagtttgt ggaggagttc atctggccgg ccatccagtc cagcgcactg 240
tatgaggacc gctacctcct gggcacctct cttgccaggc cctgcatcgc ccgcaaacaa 300
gtggaaatcg cccagcggga gggggccaag tatgtgtccc acggcgccac angaaagggg 360
aacgatcang tccgg 375

<210> 932
<211> 776
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 579, 625, 657, 662, 682, 690, 693, 707, 718, 757, 764
<223> n = A,T,C or G

<400> 932
gcagggtgag agcgcgcgct tgcggacgcg gcggcattaa acggttgcag gcgtagcaga 60
gtggtcgttg tctttctagg tctcagccgg tcgtcgcgac gttcgcccgc tcgctctgag 120
gctcctgaag ccgaaaccag ctagactttc ctccttcccg cctgcctgta gcggcgttgt 180
tgccactccg ccaccatgtt cgaggcgcgc ctggtccagg gctccatcct caagaaggtg 240
ttggaggcac tcaaggacct catcaacgag gcctgctggg atattagctc cagcggtgta 300
aacctgcaga gcatggactc gtcccacgtc tctttggtgc agctcaccct gcggtctgag 360
ggcttcgaca cctaccgctg cgaccgcaac ctggccatgg gcgtgaacct caccagtatg 420
tccaaaatac taaaatgcgc cggcaatgaa gatatcatta cactaagggc cgaagataac 480
gcggatacct tggcgctagt atttgaagca ccaaaccaag gagaaaagtt tcaagactat 540
tgaaaatgaa agtttgatgg aatttagaat gtttgaacna ctttgggaaa tttccaaaac 600
aaggagttac aggcttgtgt aagtnaaaag aatgcctttc tgggggggaaa tttggcncct 660
tntattgccc caagaacttc angccatttn ttnggaaaaa tgcctgnttg taaatttnct 720
ggggccaaaa aaacggaggt ggaaaatttt tttgcanttg gaanaacttt ggaaat 776

<210> 933
<211> 521
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 1, 2, 291, 302, 418, 420, 506, 516
<223> n = A,T,C or G

<400> 933
nnttttttttt ttttttttcgg atgcaaacag caaaaggctt tattgggaac acgggtaccc 60
gggcgactca gtctatcgga tgactggcgc accgagtgtg gggtttttac ccttttata 120
gggctgggga gcaaaaagcg cggttacaga agcgagaagc gagctgattg gttagtttaa 180
ataaggcttg gggtttttcc cggtcttggg gaacttgaaa ctgaggtggg actttccaga 240
aactgttgct agtttcgctt tatctgagta ccatctgttc ttggccctga nccggggccc 300
angtgctcga ccacagatat cctgtttggc ccctgtccca gttttgttca gccttattct 360
ttaactaaac ttccttgtga cttttgagaa ctcacctctg gtaccttttc atgccttncn 420
aaatggcgtt actgcagcta gcttgctaac cttatggtgg ggcttttcat ttcccccccct 480
ctttcttgga aaactgaaat aaaaanctttt ttattnaccc c 521

<210> 934
<211> 734
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 46, 583, 607, 629, 633, 679, 697, 727
<223> n = A,T,C or G

<400> 934
cagcgcgggc gcgggccaag gccctgcagg agcagccaaa gatgtnttca gaagaatccg 60
taacagaaga tgacaagagg agaaactatg gaggagtata tgttggccta ccatctgaag 120
ctgtcaatat ggtgtccagt caaacaaaga cggttcggaa aaattagaag aaaataacat 180
catgactcaa gaatcaagag cttgctcatc agtttggaag gaatttggct ccgtgggacg 240
ttgtaatgtg cacagacatt tccaaggaaa ttctaaacag tcacccttcc cttttgcatt 300
cccccaaatc ttaagtgtat acataaaacc ctgggtacat attgttgtgg taatagaagg 360
gaattggtta aacagtacac ttgtttatgg aactttctgt ggccacctac gaaagacaag 420
ttaacaaact gtcatggagg ctgttgttgc ccagccaggg ccgctgcatt ttgacaacat 480
ttccaccctg gccactcagc acatttcatg gaggtcatgt cttttcactg atactttttt 540
gatagttttt atataacaaa atccttattc tatttataac ttnagatgat aaggcactat 600
aaattantga cctaaaataa tatatttgnc tgntatcttt tgctatttct acttcacttt 660
atttttagct gtaaaattng gtaaatggat tcttacnact atctctttcc ctttcttact 720
atttggnttt ccac 734